5-27

SUPREME COURT OF THE UNITED STATES.

No. 123.

ROSS WINANS, PLAINTIFF IN ERROR,

vs.

THE NEW YORK AND ERIE RAILROAD COMPANY.

IN ERROR TO THE CIRCUIT COURT UNITED STATES FOR THE NORTHERN DISTRICT OF NEW YORK.

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UNITED STATES OF AMERICA, *ss.*

The President of the United States of America to the Judges of the Circuit Court of the United States for the Northern District of New York. Greeting:

Because in the record and proceedings, as also in the rendition of a judgment in a plea which is in the said Circuit Court before you, between Ross Winans, plaintiff, and the New York and Erie Railroad Company, defendants, manifest error hath happened to the great damage of the said Ross Winans as by his complaint appears, and it being fit that the error, if any there hath been, should be duly corrected, and full and speedy justice done to the parties aforesaid in this behalf, you are hereby commanded if judgment be therein given, that then, under you seal, distinctly and openly, you send the record and proceedings aforesaid with all things concerning the same to the Supreme Court of the United States, together with this writ, so that you have the same at Washington on the first Monday of December next, in the said Supreme Court to be then and there held, that the record and proceedings aforesaid being inspected, the said Supreme Court may cause further to be done therein, to correct that error what of right and according to the law and custom of the United States should be done.

Witness, the Honorable Roger B. Taney, Chief Justice of the said Supreme Court of the United Sates, this thirteenth day of April, in the year of our Lord one thousand eight hundred and fifty seven, and of the Independence of the United States the eighty-first.

[L. S.] AUG. A. BOYCE,
Clerk.

The foregoing writ of error is hereby allowed this 13th day of April, 1857.

S. NELSON.

TO THE SUPREME COURT OF THE UNITED STATES.

The return to the foregoing writ appears by the schedule thereto annexed. The answer of the Judges of the Circuit Court of the United States for the Northern District of New York mentioned in said writ.

[L. S.] AUG. A. BOYCE,
Clerk of the Circuit Court of the United States for the Northern District of New York.

UNITED STATES OF AMERICA, *ss.*

To the New York and Erie Railroad Company, greeting: You are hereby cited and admonished to be and appear at a Supreme Court of the United States, to be holden at Washington, on the first Monday in December next, pursuant to a writ of error filed in the Clerk's office of the Circuit Court of the United States for the Northern District of New York, wherein Ross Winans is plaintiff in error, and you are defendants in error, to show cause, if any there be, why the judgment in the said writ of error mentioned, should not be corrected, and speedy justice should not be done to the parties in that behalf.

Witness the Honorable Samuel Nelson, one of the justices of the said Supreme Court of the United States, this thirteenth day of April in the year of our Lord one thousand eight hundred and fifty seven.

S. NELSON.

We admit service this 13th day of April, 1857, of the foregoing citation.

EATON & DAVIS,
Attorneys of Record for the New York & Erie Railroad Company, as defendants in the action in which the judgment named in said citation was rendered.

CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

ROSS WINANS,
vs.
THE NEW YORK AND ERIE RAILROAD COMPANY.

UNITED STATES OF AMERICA,
Northern District of New York, ss.

I, Augustus A. Boyce, Clerk of the Circuit Court of the United States of America, in and for the Northern District of New York, in the Second Circuit, do hereby certify to the Supreme Court of the United States that the record and other proceedings in the above entitled cause hereunto annexed are true transcripts of the originals remaining on the files of my office in the said cause.

In testimony whereof, I have hereunto subscribed my name and affixed the seal of the said court at my office, in Utica, this 14th day of April, in the year of our Lord one thousand eight hundred and fifty-seven, and of the Independence of the United States the eighty-first.

[L. S.]

AUG. A. BOYCE,
Clerk of the Circuit Court of the United States for the Northern District of New York.

IN THE CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

Pleas before the Judges of the Circuit Court of the United States for the Northern District of New York, at the village of Canandaigua, at the stated term of said court, held at said village on the Tuesday next after the third Monday of June, in the year of our Lord one thousand eight hundred and fifty-five.

Witness the Honorable Samuel Nelson, one of the judges of the said court.

AUGUSTUS A. BOYCE,
Clerk.

Northern District of New York, ss.

Be it remembered that, heretofore, to wit, at a stated term of the Circuit Court of the United States, for the Northern District of New York, held at Canandaigua, on the Tuesday next after the third Monday of June, 1855, the New York and Erie Railroad Company, a corporation created by the Legislature of the State of New York, were summoned to answer unto Ross Winans, of a plea of trespass on the case for the infringement of letters patent issued to said Ross Winans, by the United States, to his damage of one hundred thousand dollars, by summons personally served upon John Arnott, one of the directors of the said corporation, at Elmira, in said Northern District of New York, and thereupon the said Ross Winans, plaintiff, declared against the said "the New York and Erie Railroad Company," defendants, as follows, to wit:—

IN THE CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

Of the term commencing the Tuesday next after the third Monday of June, in the year of our Lord one thousand eight hundred and fifty-five.

Northern District of New York, ss.

The New York and Erie Railroad were summoned to answer Ross Winans, of a plea of trespass on the case for the infringement of letters patent, and thereupon the said Ross Winans, by Blatchford, Seward and Griswold, his attorneys, complains:—

For that, whereas, heretofore, and before and at the time of the granting of the letters patent hereinafter mentioned, and before the committing of the several grievances hereinafter mentioned, to wit, on the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, the said plaintiff was a citizen of the United States, and was the true, original and first inventor of a certain new and useful improvement in the constructions of cars or carriages intended to run upon railroads, mentioned and fully de-

scribed in the letters patent, hereinafter mentioned, which new and useful improvement was not known or used before the application by him for a patent therefore, as hereinafter mentioned: and the said plaintiff, having paid into the treasury of the United States the sum of thirty dollars, and having hereafter presented a petition to the Secretary of the State of the United States, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent might be granted therefor, and having delivered to the said Secretary, with said petition, a receipt for said sum, and having sworn before a person authorized to administer oaths, that he did verily believe that he was the true inventor or discoverer of the said improvement, and having delivered a written description of his said invention, and of the manner of using the same, signed by himself, and attested by two witnesses, in such full, clear, and exact terms as to distinguish the same from all other things before known, and to enable any person skilled in the art with which it is most nearly connected, to make and use the same, and having in said description fully explained the principle, and the several modes in which he contemplated the application of that principle, by which it might be distinguished from other inventions, and having accompanied the whole with drawings and written references, the said Secretary of State thereafter caused letters patent to be made out in the name of the United States, bearing teste by the President of the United States, reciting the allegations and suggestions of the said petition, and giving a short description of the said invention, and granting to the said plaintiff, his heirs, administrators or assigns, for the term of fourteen years from the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof was given in the words of the said plaintiff himself, as aforesaid, in a schedule annexed to said letters patent, and made a part of the same; which letters patent were delivered to B. F. Butler, the then Attorney General of the United States, on the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, to be examined, who examined the same and found them conformable to law, and did within fifteen days after such delivery, to wit, on the day last aforesaid, certify accordingly at the foot of said letters patent, and return the same to the said Secretary of State, and the seal of the United States was affixed to the said letters patent, and the same were signed by Andrew Jackson, then President of the United States, and by John Forsyth, then Secretary of State of the United States, and were recorded in the office of the said Secretary of State, and were delivered to the said plaintiff, and bore date the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, all which *was* done under and according to the provisions of the act of Congress in such case made and provided, as by the said letters patent, which the said plaintiff now here brings

into court fully appears. And the said plaintiff further says, that being possessed of and interested in the said letters patent, he, in pursuance of the provisions of the act of Congress in such case made and provided, presented the same to the Commissioner of Patents, and on the seventh day of June, in the year of our Lord one thousand eight hundred and thirty-seven, had the same recorded anew, in the Patent Office, together with the description and specification of claim annexed to the same, as by a memorandum endorsed on the said letters patent, and signed by H. L. Ellsworth, the Commissioner of Patents, which the said plaintiff now here brings into court fully appears.

And the said plaintiff further says that, being possessed of and interested in the said letters patent, he, in pursuance of the provisions of the act of Congress in such case made and provided, presented the same to the Commissioner of Patents, on the twenty-first day of December, in the year of our Lord one thousand eight hundred and fifty-four, and on account of alleged errors in the record, had the same recorded again in the patent office, together with the said description and specification of claim as by a memorandum endorsed on the said letters patent, and signed by C. Mason, the then Commissioner of Patents, which the said plaintiff now here brings into court fully appears.

And the said plaintiff further says, that no drawing was originally annexed to the said letters patent, nor was any drawing referred to in the said description, or in the said specification of claim, and that he, the said plaintiff, having procured a drawing with written references as a delineation of said invention, verified the same by his oath in writing, made on the nineteenth day of November, in the year of our Lord one thousand eight hundred and thirty-eight, in such manner as the Commissioner of Patents required, before a proper officer, to the effect that he was the inventor of the said improvement, and that the said last mentioned drawing which was annexed to the said oath, was, as he verily believed, a true delineation of the said invention, as described in the said letters patent, and that the said drawing, so verified, with the said written references, was placed on file in the Patent Office, together with a certificate of the said oath on the nineteenth day of November, in the year of our Lord one thousand eight hundred and thirty-eight, all which was done under and according to the provisions of the act of Congress in such case made and provided, as by duly certified copies from the Patent office of said drawing and of said written references and of said certificate of said oath which the said plaintiff now here brings into Court, fully appears.

And the said plaintiff further says that, desiring an extension of the said letters patent beyond the said term of their limitation, he, on the second day of June, in the year of our Lord one thousand eight hundred and forty-eight, made application therefor in writing to the Commissioner of Patents, setting forth the grounds thereof,

and paid the sum of forty dollars to the credit of the treasury, and furnished to the said commissioner a statement in writing, under oath, of the ascertained value of said invention, and of his, the said plaintiff's, receipts and expenditures, sufficiently in detail to exhibit a true and faithful account of loss and profit in any manner accruing to him from and by reason of said invention, and that the provisions of the Acts of Congress in such case made and provided having been complied with, Henry H. Sylvester the then acting Commissioner of Patents, thereto for that purpose duly authorized renewed and extended the said letters patent on the twenty-fifth day of September, in the year of our Lord one thousand eight hundred and forty-eight, by making a certificate thereon of such extension, for the term of seven years from and after the expiration of said first term, which last mentioned certificate bore date on said last named day, and was together with a certificate, made in due form of law, by the said Sylvester, acting commissioner, as aforesaid, and certifying that the term of said letters patent ought to be extended, duly entered on record in the Patent office, all which was done under and according to the provisions of the acts of Congress in such case made and provided, as by the said certificate of extension made on the said letters patent, and by a duly certified copy from the Patent office of both of said certificates which the said plaintiff now here brings into Court fully appears.

And the said plaintiff avers that the said letters patent have the same effect in law as though they had been originally granted for the term of twenty-one years.

Yet the said defendants, well knowing the premises aforesaid, but contriving and wrongfully and injuriously intending to injure the said plaintiff, and to deprive him of the profits, benefits and advantages which he might and otherwise would have derived and acquired from using, and vending to others to be used, the said improvement after the granting of the said letters patent, and during the said term of twenty-one years, and before the commencement of this suit, to wit, on the first day of January, in the year of our Lord one thousand eight hundred and thirty-five, and on divers days, and times between that day and the commencement of this suit and within the said Northern District of New York, to wit, at Elmira, in said Northern District, wrongfully, unjustly, and without the leave or license, and against the will of the said plaintiff, did use divers, to wit, thirty thousand cars, and did cause the same to run upon a railroad used and operated by said defendants, each of which cars contained in its construction, the said improvement, in breach of the said letters patent, and of the right and liberty thereby granted as aforesaid and in violation of the statutes of the United States in such case made and provided.

Whereby and by means of which grievances the said plaintiff has been greatly injured, and deprived of great profits, which he might, and otherwise would, have derived from the said improvement, to wit,

at Elmira aforesaid, and has sustained actual damages to a large amount, to wit, the sum of one hundred thousand dollars.

By means of which said premises, and by force of the statutes aforesaid, an action has occurred to the said plaintiff to recover of the said defendants the said actual damages, and such additional amount not exceeding in the whole three times the amount of the said actual damages, as the Court may see fit to order and adjudge.

Yet the said defendants, though often requested, have never paid the same, or any part thereof, to the said plaintiff, but have refused and still refuse so to do, to the damage of the said plaintiff of one hundred thousand dollars, and therefore he brings suit, &c.

BLATCHFORD, SEWARD & GRISWOLD,
Attorneys for Plaintiffs,
1 *Hanover Street, New York.*

Oyer.

The United States of America, to all to whom these letters patent shall come:

Whereas Ross Winans, a citizen of the United States, hath alleged that he has invented a new and useful improvement in the construction of cars or carriages intended to run upon railroads, which improvement he states has not been known or used before his application, hath sworn that he does verily believe that he is the true inventor or discoverer of the said improvement; hath paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose.

These are, therefore, to grant according to law to the said Ross Winans, his heirs, administrators, or assigns, for the term of fourteen years from the first day of October, one thousand eight hundred and thirty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used the said improvements, a description whereof is given in the words of the said Ross Winans himself in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof I have caused these letters to be made patent and the seal of the United States to be hereunto affixed.

Given under my hand at the City of Washington, this first day of October, in the year of our Lord one thousand eight hundred and thirty-four, and of the Independence of the United States of America the fifty-ninth.

[L. S.] ANDREW JACKSON.

By the President,

JOHN FORSYTH,
Secretary of State.

the wheels, whilst there is no general curvature of the rails to counteract it. To avoid this effect, and the unpleasant motion and tendency to derangement consequent upon it, an additional motive is furnished for placing the axles at a considerable distance apart. The object of my invention is, among other things, to make such an adjustment or arrangement of the wheels and axles, as shall cause the body of the car or carriage to pursue a more smooth, even, direct and safe course, than it does, as cars are ordinarily constructed, both over the curved and straight parts of the road, by the before mentioned desideratum of combining the advantages of the near and distant coupling of the axles, and other means to be hereinafter described. For this purpose, I construct two bearing carriages, each with four wheels, which are to sustain the body of the passenger or other car, by placing one of them at or near each end of it, in a way to be presently described. The two wheels on either side of these carriages are to be placed very near to each other; the spaces between their flanches need be no greater than is necessary to prevent their contact with each other. These wheels I connect together by means of a very strong spring—say double the usual strength employed for ordinary cars—the ends of which spring are bolted, or otherwise secured, to the upper sides of the boxes, which rest on the journals of the axles; the longer leaves of the springs being placed downwards, and surmounted by the shorter leaves. Having thus connected two pairs of wheels together, I unite them into a four wheel bearing carriage, by means of their axles, and a bolster of the proper length, extending across, between the two pairs of wheels, from the centre of one spring to that of the other, and securely fastened to the tops of them. This bolster must be of sufficient strength to bear a load upon its centre of four or five tons. Upon this first bolster I place another of equal strength, and connect the two together by a centre pin, or bolt, passing down through them, and thus allowing them to swivel or turn upon each other, in the manner of the front bolster of a common road wagon. I prefer making these bolsters of wrought or cast iron; wood, however, may be used. I prepare each of the bearing carriages in precisely the same way. The body of the passenger or other car, I make of double the ordinary length of those which run on four wheels, and capable of carrying double their load. This body I place so as to rest its whole weight upon the two upper bolsters of the two before mentioned bearing carriages or running gear. I sometimes place these bolsters so far within the ends of the body of the car, as to bring all the wheels under it, and in this case, less strength is necessary in the car body, than when the bolster is situated at its extreme ends. In some cases, however, I place the bolster so far without the body of the car, at either end, as to allow the latter to hang down between the two sets of wheels or bearing carriages, and to run, if desired, within a foot of the rails.

When this is done, a strong frame-work projects out from either

end of the car or carriage body, and rests upon the upper bolsters of the two bearing carriages. This last arrangement, by which the body of the car is hung so low down, manifestly affords a great security to the passengers, exempting them, in a great degree, from those accidents to which they are liable, when the load is raised. Several bodies may be connected, or rest on a common frame, and be supported on the bearing carriage, in a manner similar to that of a single body. When the bolsters of the bearing carriages are placed under the extreme ends of the body, the relief from shocks and concussions, and from lateral vibrations, is greater than it is when the bolsters are placed between the middle and the ends of the body, and this relief is not materially varied by increasing or diminishing the length of the body, while the extreme ends of it continue to rest on the bolsters of the bearing cars, the load supposed to be equally distributed over the entire length of the body.

Although I prefer the use of a single spring to a pair of wheels as above described, instead of the ordinary spring to each wheel, and consider it as more simple, cheap and convenient than any other arrangement; the end which I have in view may, nevertheless, be obtained by constructing the bearing carriages in any of the modes usually practised, provided that the fore and hind wheels of each of them be placed very near together; because the closeness of the fore and hind wheels of each bearing carriage, taken in connection with the use of two bearing carriages coupled remotely from each other as can conveniently be done, for the support of one body, with a view to the objects and on the principles herein set forth, is considered by me as a most important feature of my invention, for by the contiguity of the fore and hind wheels of each bearing carriage, while the two bearing carriages may be at any desirable distance apart, the lateral friction from the rubbing of the flanches against the rails is most effectually avoided, whilst at the same time all the advantages attendant upon placing the axles of a four-wheeled car far apart are thus obtained. The bearing of the load on the centre of the bolster, which also is the centre of each bearing carriage, likewise affords great relief from the shocks occasioned by the percussions of the wheels on protuberant parts of the rails or other objects, and from the vibrations consequent to the use of coned wheels; as the lateral and vertical movements of the body of the car resulting from the above causes are much diminished. The two wheels on either side of one of the bearing carriages may, from their proximity, be considered as acting like a single wheel, and as these two bearing carriages may be placed at any distance from each other, consistent with the required strength of the body of the car, it is evident that all the advantage is obtained which results from having the two axles of a four-wheeled car at a distance from each other whilst its inconveniences are avoided. Another advantage of this car compared with those in common use, and which is viewed by me as very important, is the increased safety afforded by it to passengers, not only from

the diminished liability to breakage, or derangement in the frame work, but also from the less disastrous consequences to be apprehended from the breaking of a wheel, axle, or other part of the running gear, as the car body depends, for its support and safety, upon a greater number of wheels, and bearing points on the road. I do not claim as my invention the running of cars, or carriages upon eight wheels, this having been previously done; not, however, in the manner or for the purposes herein described, but merely with a view of distributing the weight, carried more evenly upon a rail or other road, and for objects distinct in character from those which I have had in view, as herein before set forth. Nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident, as to accomplish this purpose. What I claim, therefore, as my invention, and for which I ask a patent, is, the before described manner of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, so as to accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles.

ROSS WINANS.

Witnesses,
G. BROWN,
JNO. H. B. LATROBE.

Patent office. Received 7 June, 1837. Recorded anew in this office.

H. L. ELLSWORTH,
Commissioner of Patents.

Patent office, Dec. 28, 1854. Received Dec. 21, 1854, and, on account of alleged errors in the record, recorded again.

C. MASON,
Commissioner of Patents.

Whereas, upon the petition of Ross Winans, of Baltimore, Md., for an extension of the within patent, granted to the said Ross Winans on the first day of October, 1834, the undersigned, *acting Commissioner of Patents*, under the 18th section of the act of Congress, approved the 4th day of July, 1836, entitled "An act to promote the progress of the useful arts, to repeal all acts heretofore made for that purpose," and the act approved 27th May, 1848, entitled "An act to provide additional examiners in the patent office, and for other purposes," did, on the 25th day of September, 1848, certify that the said patent ought to be extended.

Now, therefore, I, Henry H. Sylvester, acting Commissioner of Patents, by virtue of the power vested in me by said acts of Congress, do renew and extend said patent, and certify that the same is hereby extended for the term of seven years from and after the ex-

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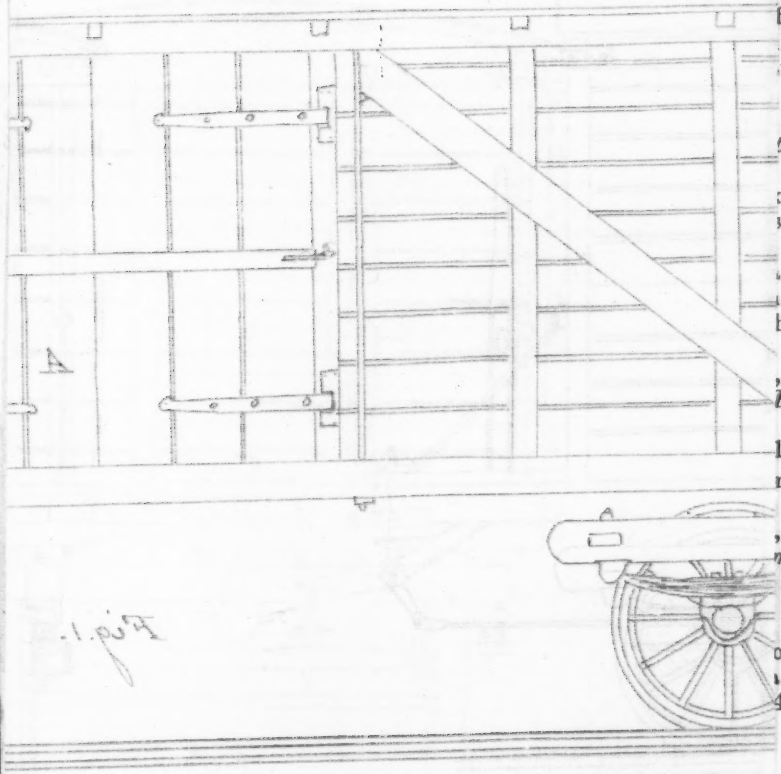

Fig. 1.

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the diminished liability to breakage, or derangement in the frame work, but also from the less disastrous consequences to be apprehended from the breaking of a wheel, axle, or other part of the running gear, as the car body depends, for its support and safety, upon a greater number of wheels, and bearing points on the road. I do not claim as my invention the running of cars, or carriages upon eight wheels, this having been previously done; not, however, in the manner or for the purposes herein described, but merely with a view of distributing the weight, carried more evenly upon a rail or other road, and for objects distinct in character from those which I have had in view, as herein before set forth. Nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident, as to accomplish this purpose. What I claim, therefore, as my invention, and for which I ask a patent, is, the before described manner of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, so as to accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles.

ROSS WINANS.

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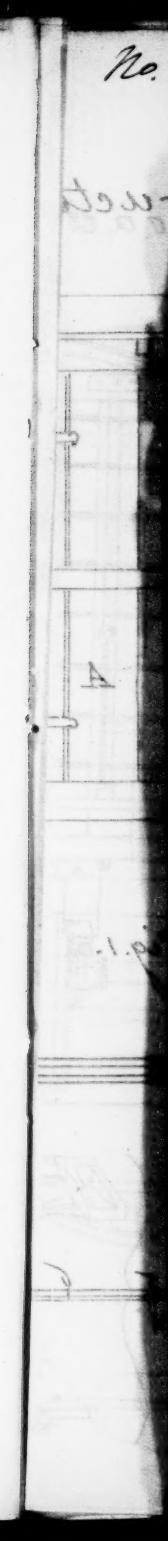
Patent office, Dec. 28, 1854. Received Dec. 21, 1854, and, on account of alleged errors in the record, recorded again.

C. MASON,
Commissioner of Patents.

Whereas, upon the petition of Ross Winans, of Baltimore, Md., for an extension of the within patent, granted to the said Ross Winans on the first day of October, 1834, the undersigned, *acting Commissioner of Patents*, under the 18th section of the act of Congress, approved the 4th day of July, 1836, entitled "An act to promote the progress of the useful arts, to repeal all acts heretofore made for that purpose," and the act approved 27th May, 1848, entitled "An act to provide additional examiners in the patent office, and for other purposes," did, on the 25th day of September, 1848, certify that the said patent ought to be extended.

Now, therefore, I, Henry H. Sylvester, acting Commissioner of Patents, by virtue of the power vested in me by said acts of Congress, do renew and extend said patent, and certify that the same is hereby extended for the term of seven years from and after the ex-



No. 125.

piration of the first term, viz: the first day of October, 1848, which certificate, on the petition of the applicant, together with this certificate of the acting Commissioner of Patents, having been duly entered of record in the patent office, the said patent now has the same effect in law as though the same had been originally granted for the term of *twenty-one years*. In testimony whereof I have caused the seal of the patent office to be hereunto affixed this twenty-fifth day of September, in the year of our Lord one thousand eight hundred and forty-eight, and of the independence of the United States the seventy-third.

[L. S.] HENRY H. SYLVESTER,
Acting Comm'r of Patents.

In the matter of the application of Ross Winans for an extension of his patent for improvements in railroad cars and carriages, dated October 1st, 1834, the third Monday in September, 1848 (25th), having been appointed for hearing the application of the said Ross Winans, the undersigned, agreeably to published notice, and after examining the evidence adduced by the petitioner, decided that said patent ought to be extended.

H. H. SYLVESTER,
Acting Comm'r of Patents.

Sept. 25, 1848.

The petition and testimony of the said Ross Winans having been fully examined, it is ordered that his patent be extended.

H. H. SYLVESTER,
Acting Comm'r.

(For drawing see page 24.)

References to the annexed drawings of Ross Winans' improvement in the construction of cars or carriages intended to run on railroads, for which letters patent were issued, dated October 1st, 1834.

Fig. 1.—Side view of an eight-wheel car.

Fig. 2.—End view of the same.

Fig. 3.—Upper and lower bolster detached from the body and bearing carriage.

A A, represents the body of the car resting on the bearing carriages B & C, as exhibited at D D, on pivots equidistant from the wheels of each bearing carriage.

H, represents an upper bolster of cast iron, separate from the body of the car, with its pivot X corresponding with the socket Y in the lower bolster E, also shown as separate from the bearing carriage.

STATE OF MARYLAND,
Baltimore City, to wit, ss:

On this nineteenth day of November in the year eighteen hundred and thirty-eight, before me the subscriber a justice of the peace of the said State in and for the said city, personally appeared Ross Winans, and made solemn oath that he is the inventor of an improvement in the construction of cars or carriages intended to run on railroads for which letters patent of the United States were granted to him, dated the first day of October, 1834; and that the annexed drawing is, as he verily believes, a true delineation of the invention as described in the said letters patent.

Sworn before

JAMES BLAIR,
Justice of Peace.

CIRCUIT COURT OF THE UNITED STATES,
For the Northern District of New York:

ROSS WINANS
vs.
THE NEW YORK & ERIE RAILROAD COMPANY.

And the said defendant, the New York and Erie Railroad Company, by Eaton and Davis, its attorneys, comes and defends the wrong and injury when, &c., and says that it is not guilty of the said supposed grievances above laid to its charge, or any, or either, or any part thereof, in manner and form as the said plaintiff hath above thereof complained against it, and of this the said defendant puts itself upon the country, and the said plaintiff doth the like, &c.

July 26th, 1855.

EATON & DAVIS,
Defendants' Atty's.

IN THE CIRCUIT COURT OF THE UNITED STATES,
In and for the Northern District of New York:

ROSS WINANS
vs.
THE NEW YORK & ERIE RAILROAD COMPANY.

Please take notice that on the trial of this cause, the defendant will offer evidence to prove that said plaintiff was not the original first and true inventor of the alleged patented invention or improvement described in the letters patent, specification and drawing upon which the suit is brought. That the same or substantially the same, or a substantial and material part of the same was patented in England by William and Edward W. Chapman by letters patent, dated December 30, 1812, and the same is printed and published in a printed publication or book, entitled "The Repertory of Arts, Ma-

nufactures and Agriculture, second series," printed and published in London, 1814, more particularly on that portion thereof between pages 129 and 142 inclusive, and the drawings accompanying the same and therein referred to.

That the same or substantially the same, or a substantial and material part of the same was printed and published in the year 1825 in a book or printed publication, entitled "A Practical Treatise on Railroads and Carriages," by Thomas Tredgold, in London, more particularly on pages 93, 94, and 179, and the drawing plate IV. Fig. 26, and pages 95, 12, 13, 118, 119, 120, 121, 127, 130, 126, 133, 101, 173, 174, 135, 42, 43 and other parts of said work. Also in a printed publication, entitled "Earles' Treatise on Railroads," published in Philadelphia in the year 1830.

Also in a printed publication entitled "Wood's Treatise on Railroads," by Nicholas Wood, in London in 1825.

Also in a second edition of the same work by the same author, printed and published in 1831.

Also in an American edition of the said "Wood's Treatise," by George W. Smith, printed and published in Philadelphia in 1832.

Also in a printed publication entitled Strickland's Reports on Canals and Railroads printed and published in Philadelphia, 1826.

Also, in the printed publication or Report of Horatio Allen, of May 16, 1831, to the President and Directors of the South Carolina Canal and Railroad Company, printed and published at Charleston, South Carolina, as aforesaid. Also, in the printed publication or newspaper styled "American and Commercial Daily Advertiser," published in Baltimore, Maryland, on July 4, 1831, and in the newspaper styled the Baltimore Gazette and Daily Advertiser, printed and published in Baltimore, December 17, 1830; January 19, 1831; July 2, 1831, and in the newspaper styled the Baltimore Patriot and Mercantile Advertiser, printed and published in Baltimore, June 24, 1831. Also in the official reports of Jonathan Knight and George Gillingham, officers of the Baltimore and Ohio Railroad Company to the President of said Company, printed and published in Baltimore in 1833 and 1834, in the regular reports of the President and Directors to the stockholders of the said Company.

Also in the printed publication entitled "American Railway Journal," published in the city of New York on July 27, 1822, pages 468, &c.

In the same publication made in December 28, 1833, pages, 8, 18, &c.

Also you are hereby notified that the defendants on the trial of the cause will offer evidence to prove that the same, or substantially the same, or a substantial and material part of the same, was first invented, and was patented and described in the specification and drawings of letters patent by Jonus P. Fairland, residing at Wilmington, Delaware, the said patent being dated and issued on the 19th day of January, A. D. 1833 and the said improvement more particularly specified in the Fig. 2 of said patent, and the specification referring and belonging thereto.

And also described in the specification and drawings of letters patent issued to James Wright on the 10th day of September, in the year 1829; and in certain letters patent issued to John Elgar, in the specifications, drawings, and models thereof, in the Patent Office, dated on the first day of October, 1830.

Also, on the trial of the cause, the defendants will offer evidence to prove that the same, or substantially the same, or a substantial and material part of the plaintiff's alleged patented improvement was in public use and by the Baltimore and Ohio Railroad Company and others, with his knowledge, acquiescence and consent on the Baltimore and Ohio Railroad and elsewhere, at or near the city of Baltimore, and in the State of Maryland, in the years 1831, 1832, 1833 and 1834, and prior to his application for a patent, and that the same was fully dedicated or abandoned, and had gone into public use with his knowledge and consent.

Also, that the same or substantially the same, or a substantial and material part of the said alleged improvement, prior to the alleged invention thereof by the plaintiff, was designed by Conduce Gatch and others, and not the plaintiff, and was known and used on the Baltimore and Ohio Railroad, running to and from the city of Baltimore in the State of Maryland, and that the same was known to Conduce Gatch, Jacob Rupp, Leonard Forrest, John M. Eichelberger, Edward May, Henry Shultz, Thomas McMechen, Edward Gillingham and others residing in the city of Baltimore; to William E. Rutter, residing at Elmira, State of New York; to John Rupp, residing at Hanover, State of Pennsylvania; to John H. McClain, residing at or near Richmond, State of Virginia; to James D. Dorsey, residing at or near Wilmington, State of Delaware.

Also, that the same, or substantially the same, was previously known and used on the Quincy Railroad, near Boston, in the State of Massachusetts, and was designed and conducted under the direction of Gridley Bryant, and was known to said Gridley Bryant, residing at Scituate; to David R. Nash, residing at Dorchester, to Noah Cummings and Jothan Cummings, residing at Quincy, all in the State of Massachusetts; to John R. Rowell, residing at Salem, and John G. Simpson, residing at Nottingham, both in the State of New Hampshire.

And to divers other persons in Massachusetts and elsewhere.

That the same or substantially the same was previously known and used on the South Carolina Railroad, running to and from Charleston in the State of South Carolina, and at the West Point Foundry and Machine Shop, in the city of New York, and was known to and designed by Horatio Allen, residing in the city of New York; to Christian E. Detmold, residing in Orange, in the State of New Jersey; to the officers and agents of the said South Carolina Railroad Company, and to J. D. Pestche of Charleston, now an officer of said Company, and divers other persons, whose names more particularly are not known, residing at Charleston,

State of South Carolina, and other places along and near the line of said road; to Edward Martin, residing at Hoboken, Isaac Drepps, residing at Trenton, both in New Jersey; David Beggs, residing at Syracuse; David Matthew, residing at Philadelphia.

That the same, or substantially the same, or a substantial and material part of the same, was previously known and used on the Mohawk and Hudson Railroad, also on the Schenectady and Saratoga Railroad, both in the State of New York; and was designed by John B. Jervis and others, and not by the plaintiff, and known to said John B. Jarvis, residing in the city of New York, and David Matthew, and also Asa Whitney, residing at Philadelphia, and other persons in the State of New York.

That the same, or substantially the same, or a substantial and material part of the same, was previously known and used on the Philadelphia and Columbia Railroad, near the city of Philadelphia, and on the Philadelphia, Germantown and Norristown Railroad, at or near said city, and was designed by George Fultz and Jacob C. Carncross and others, and not the plaintiff, and was known to said George Fultz, formerly residing at Philadelphia, now deceased, to said Jacob C. Carncross, Laban Proctor, John Murphy, Joseph L. Kite, Harman Yerkes, William Pettit, and others residing at Philadelphia; to Richard Imlay, residing in the city of New York.

And that this defendant, on the trial of the cause, will further offer evidence to prove that the said plaintiff surreptitiously and fraudulently obtained said alleged invention from said Conduce Gatch and Jacob Rupp, or either of them, while they were using due diligence in perfecting and introducing the same into use on the said Baltimore and Ohio Railroad.

And this defendant further will offer evidence on the trial to prove that the said cars, the Chapman, the Tredgold, the Wylam Carriage, the Quincy Car, the Baltimore timber wood and carriage and horse cars, the Columbus, Winchester and Dromedary cars, and the said cars at Philadelphia and elsewhere mentioned as aforesaid, and known and used prior to the alleged improvement by the plaintiff, are, and each is substantially the same as the cars used by this defendant, and that under the true mechanical meaning and intent of plaintiff, said specification and patent, the same is or are not any infringement thereof.

That on the trial of said cause, this defendant will also offer evidence to prove that the drawing filed by the plaintiff in the Patent Office in 1838, as set out in the declaration in this cause, is not in fact a true delineation of the invention or improvement specified in the letters patent, and schedule thereto annexed, as required by law; that the same contains elements not intended to be embraced in said original specification and patent; and which were subsequently designed and introduced by said Jacob Rupp and other persons, and not by the plaintiff, and that the said letters patent are not entitled on this behalf to any force or effect in law.

That the said alleged extension of the said patent was not in fact an extension by the proper person or officer as required by law, and purports to be a person not the Commissioner of Patents, and not authorized by law to grant extension of letters patent under the then existing Acts of Congress.

Also, that lawful notice, as required by Act of Congress, of said application for an extension was not given, and therefore the said alleged extension is of no effect.

That the specification and letters patent of said plaintiff have not been recorded as required by law, to render the patent valid and effective, and give notice thereof to the defendant and public generally.

That no damage whatever has been sustained by the plaintiff by or from the manufacture or use of any cars by the defendant; and even if the facts laid in the plaintiff's declaration were true (which the defendant entirely and unqualifiedly denies) as to the use of any cars of his original and first invention, or exclusive right to the cars used by defendant, even then the plaintiff has no cause of action anterior to six years prior to the time of bringing this action under the statutes of limitation in force; and the defendant will further offer evidence to prove that the cars used on their road have been openly and publicly used with the knowledge of said plaintiff, and without objection or claim until a very late period on his part; and that similar cars have been for many years manufactured and sold, and in general use throughout the United States, with the knowledge of the said plaintiff, and without objection or claim or allegation that the same were patented by him, and without making any claim of right in whatever form or manner thereto.

And the defendant will further offer evidence to prove that the said alleged invention, as described and recommended in the specification of the plaintiff's patent, is not useful within the true meaning and intent of the patent law, and that the same is pernicious and dangerous to public travel, and life and limbs of persons attempted to be conveyed as passengers therein, and that the said patent is therefore void and of no force in law.

And further, on the trial of the said cause, the defendants will offer evidence to prove that the specification of plaintiff's said patent is not in such full, clear, and exact terms as required by law; but is obscure and ambiguous, and will not enable a mechanic of ordinary skill in car building to construct the same, and determine the subject matter or alleged invention which said letters patent pretend to secure to said plaintiff.

EATON & DAVIS,
Deft's Att'ys.

Sept. 5th, 1855.

To BLATCHFORD, SEWARD, and GRISWOLD,
Plaintiff's Attorneys.

CIRCUIT COURT OF THE UNITED STATES
for the Northern District of New York.

ROSS WINANS
vs.
THE NEW YORK AND ERIE RAILROAD COMPANY.

Please take notice that in addition to the notice of special matter heretofore given, the defendant, on the trial of this cause, will offer evidence to prove that the alleged patented improvement of the plaintiff, or a substantial and material part thereof, was previously known and used in Baltimore, to John Brown and others, by the name of Brown, and to Leonard Phleger, residing in Philadelphia, and to other persons more particularly at present unknown, and the same was known in Baltimore to the late Captain William Gibbs McNeill (now deceased), and George Bartlett and others residing in Baltimore.

And that the same, or substantially the same, or a substantial and material part thereof, was previously known and used at the city of Baltimore, on the Baltimore and Susquehanna Railroad, and was known to J. C. Hollins, to R. S. Hollins, John C. A. Smith, and others residing in the city of Baltimore.

That the same, or substantially the same, or a substantial and material part of the same, was previously known and used on the Newcastle and Frenchtown Railroad, State of Delaware, and was known to James B. Dorsey, of Wilmington, Delaware, John Randall, and Samuel Nevins, residing in New York City, upon said road, in the city of Baltimore and elsewhere.

Yours respectfully,
EATON & DAVIS.

New York, 110 Broadway, 24*th December*, 1855.

To Blatchford, Seward & Griswold,
Pl'ffs' Att'ys.

We hereby admit service of a copy of the above notice.
BLATCHFORD, SEWARD & GRISWOLD,
Pl'ff's Att'ys.

Dated New York, Dec. 24th, 1855.

And hereupon the process thereof is continued between the parties aforesaid, of the plea aforesaid in this same Court, before the Judges thereof, and the issue above joined is ordered by the said Court to be tried at a stated term of this Court, appointed to be held at the Court House in the village of Canandaigua, on the Tuesday next after the third Monday of June, in the year 1856, at which day and place last aforesaid, come the parties aforesaid, by their attorneys aforesaid, before the Honorable Nathan K. Hall, Judge of the said Court, and the jurors summoned to try the said issue being called,

also come, who to speak the truth of the matters aforesaid, being chosen, tried, and sworn, say upon their oaths, that the said defendants are not guilty of the premises above layed to their charge in manner and form as the said plaintiff has above complained against them.

Therefore it is considered the said plaintiff take nothing by the said declaration, but that he be in mercy, &c.

And it is further considered by the said Court before the said Judge thereof, now here, that the said defendants do recover against the said plaintiff two thousand four hundred and thirty-seven dollars and fifty cents ($2,437 50) for their costs and charges laid out about their defence in their behalf by the Court, before the aforesaid Judge thereof, now here adjudged to the said defendants, and with their assent according to the statute in such case made and provided. And that the said defendants have execution therefor, &c.

Judgment signed this 9th day of April, 1857.

AUG. A. BOYCE,
Clerk.

IN THE CIRCUIT COURT OF THE UNITED STATES,
For the Northern District of New York.

ROSS WINANS
vs.
THE NEW YORK AND ERIE RAILROAD COMPANY.

Be it remembered, that afterwards, to wit, on the eighteenth day of June, in the year of our Lord one thousand eight hundred and fifty-six, at a term of the Circuit Court of the United States for the Northern District of New York, held at the village of Canandaigua, in the County of Ontario in said Northern District, before the Honorable Nathan K. Hall, one of the Judges of said Court, the issue joined in this cause came on to be tried before the said Judge, and a jury then and there duly empanelled and sworn to try said issue.

The plaintiff to maintain and prove the said issue on his part read in evidence Letters Patent, of which the following is a copy:—

THE UNITED STATES OF AMERICA.

To all whom these Letters Patent shall come.

Whereas, Ross Winans, a citizen of the United States, hath alleged that he has invented a new and useful improvement in the construction of cars or carriages intended to run upon railroads, which improvement he states has not been known or used before his application; hath sworn that he does verily believe that he is the true inventor or discoverer of the said improvement; hath paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the

said improvement, and praying that a patent may be granted for that purpose.

These are, therefore, to grant, according to law, to the said Ross Winans, his heirs, administrators or assigns, for the term of fourteen years from the first day of October, one thousand eight hundred and thirty-four, the full and exclusive right and liberty of making, constructing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Ross Winans himself, in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the United States to be hereunto affixed.

Given under my hand, at the city of Washington, this first day of October, in the year of our Lord one thousand eight hundred and thirty-four, and of the Independence of the United States of America the fifty-ninth.

[L. S.] ANDREW JACKSON.

By the President.

JOHN FORSYTH,
Secretary of State.

City of Washington, to wit: I do hereby certify that the foregoing Letters Patent were delivered to me on the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, to be examined, that I have examined the same and find them conformable to law, and I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit, on this first day of October, in the year aforesaid.

B. F. BUTLER,
Attorney General of the United States.

The schedule referred to in these Letters Patent, and making part of the same, containing a description, in the words of the said Ross Winans himself, of his improvement in the construction of cars or carriages intended to run upon railroads:—

To all whom it may concern: Be it known, that I, Ross Winans, civil engineer, of the city of Baltimore, in the State of Maryland, have invented a new and useful improvement in the construction of cars or carriages, intended to travel upon railroads; which improvement is particularly adapted to passenger cars, as will more fully appear by an exposition of the difficulties heretofore experienced in the running of such cars at high velocities, which exposition I think it best to give in this specification, for the purpose of exemplifying the more clearly the object of my said improvement.

In the construction of all railroads in this country, which extend to any considerable distance, it has been found necessary to admit of

lateral curvatures, the radius of which is sometimes but a few hundred feet; and it becomes important, therefore, so to construct the cars, as to enable them to overcome the difficulties presented by such curvatures, and to adapt them for running with the least friction practicable, upon all parts of the road. The friction to which I now allude is that which arises from the contact between the flanches of the wheels and the rails, which, when it occurs, causes a great loss of power, and a rapid destruction of, or injury to, both the wheel and the rail, and is otherwise injurious.

The high velocities attained by the improvements made in locomotive engines, and which are not only sanctioned but demanded by public opinion, render it necessary that certain points of construction and arrangement, both in the roads and wheels, which were not viewed as important at former rates of travelling, should now receive special attention. The greater momentum of the load, and the intensity of the shocks and concussions, which are unavoidable, even under the best constructions, are among those circumstances which must not be neglected, as the liability to accident is thereby not only greatly increased, but the consequences to be apprehended much more serious.

The passenger and other cars in general use upon railroads have four wheels, the axles of which are placed from three and a half to five feet apart; this distance being governed by the nature of the road upon which they run, and other considerations.

When the cars are so constructed that the axles retain their parallelism, and are at a considerable distance apart, there is a necessary tendency in the flanches of the wheels to come into contact with the rails, especially on the curvatures of least radius, as the axles then vary more from the direction of the radii. From this consideration, when taken alone, it would appear to be best to place the axles as near to each other as possible, thus causing them to approach more nearly to the direction of the radii of the curves and the planes of the wheels to conform to the line of the rails.

There are, however, other circumstances which must not be overlooked in their constructions. I have already alluded to the increased force of the shocks from obstructions at high velocities; and whatever care may be taken, there will be no inequalities in the rails and wheels, which, though small, are numerous, and the perpetual operation of which produces effects which cannot be disregarded. The greater the distance between the axles, while the length of the body remains the same, the less is the influence of these shocks or concussions; and this has led, in many instances, to the placing them, in passenger cars, at or near their extreme ends. Now, however, a compromise is most commonly made between the evils resulting from a considerable separation and a near approach, as, by the modes of construction now in use, one of the advantages must be sacrificed to the other.

But it is not to the lateral curvatures and inequalities of the road alone that the foregoing remarks apply. The incessant vibration

felt in travelling over a railroad is mainly dependent upon the vertical motion of the cars, in surmounting those numerous though minute obstructions which unavoidably exist. The nearer the axles are placed to each other, the greater is the effect of this motion upon the passengers, and the greater its power to derange the machinery and the road. It becomes very important, therefore, both as regards comfort, safety, and economy, to devise a mode of combining the advantages derived from placing the axles at a considerable distance apart with those of allowing them to be situated near to each other.

It has been attempted, and with some success, to correct the tendency of the flanches to come into contact with the rails on curved and other parts of the road, by making the tread of the wheel conical; and, if the travelling upon railroads was not required to be very rapid, this would so far prove an effectual corrective, as the two rails would find diameters upon the wheels which would correspond with the difference in length, the constant tendency to deviation being as constantly counteracted by this construction; but at high velocities, the momentum of the body in motion tends so powerfully to carry it in a right line, as to cause the wheel on the longer rail to ascend considerably above that part of the cone which corresponds therewith. The consequence of this is a continued serpentine motion, principally, but not entirely, in a lateral direction; nor is this confined to the curved parts of the road, but it exists to an equal or greater extent upon those which are straight, especially when the axles are near to each other, the irregularities before spoken of constantly changing the direct course of the wheels, whilst there is no general curvature of the rails to counteract it. To avoid this effect, and the unpleasant motion and tendency to derangement consequent upon it, an additional motive is furnished for placing the axles at a considerable distance apart.

The object of my invention is, among other things, to make such an adjustment or arrangement of the wheels and axles, as shall cause the body of the car or carriage to pursue a more smooth, even, direct, and safe course than it does as cars are ordinarily constructed, both over the curved and straight parts of the road, by the beforementioned desideratum of combining the advantages of the near and distant coupling of the axles, and other means to be hereinafter described.

For this purpose, I construct two bearing carriages, each with four wheels, which are to sustain the body of the passenger or other car, by placing one of them at or near each end of it, in a way to be presently described. The two wheels on either side of these carriages are to be placed very near to each other; the spaces between their flanges need be no greater than is necessary to prevent their contact with each other. These wheels I connect together by means of a very strong spring—say double the usual strength employed for ordinary cars—the ends of which springs are bolted, or otherwise secured,

to the upper sides of the boxes, which rest on the journals of the axles; the longer leaves of the springs being placed downwards, and surmounted by the shorter leaves. Having thus connected two pairs of wheels together, I unite them into a four-wheel bearing carriage, by means of their axles and a bolster of the proper length, extending across between the two pairs of wheels, from the centre of one spring to that of the other, and securely fastened to the tops of them. This bolster must be of sufficient strength to bear a load upon its centre of four or five tons. Upon this first bolster I place another of equal strength, and connect the two together by a centre pin or bolt, passing down through them, and thus allowing them to swivel or turn upon each other in the manner of the front bolster of the common road wagon. I prefer making these bolsters of wrought or cast iron; wood, however, may be used. I prepare each of the bearing carriages in precisely the same way.

The body of the passenger or other car I make of double the ordinary length of those which run on four wheels, and capable of carrying double their load.

This body I place so as to rest its whole weight upon the two upper bolsters of the two before-mentioned bearing carriages or running gear. I sometimes place these bolsters so far within the ends of the body of the car as to bring all the wheels under it; and, in this case, less strength is necessary in the car-body than when the bolster is situated at its extreme ends. In some cases, however, I place the bolster so far without the body of the car at either end, as to allow the latter to hang down between the two sets of wheels, or bearing carriages, and to run, if desired, within a foot of the rails.

When this is done, a strong frame-work projects out from either end of the car or carriage body, and rests upon the upper bolsters of the two bearing carriages. This last arrangement, by which the body of the car is hung so low down, manifestly affords a great security to the passengers, exempting them in a great degree from those accidents to which they are liable when the load is raised. Several bodies may be connected, or rest on a common frame, and be supported on the bearing carriage, in a manner similar to that of a single body.

When the bolsters of the bearing carriages are placed under the extreme ends of the body, the relief from shocks and concussions, and from lateral vibrations, is greater than it is when the bolsters are placed between the middle and the ends of the body; and this relief is not materially varied by increasing or diminishing the length of the body, while the extreme ends of it continue to rest on the bolsters of the bearing cars, the load being supposed to be equally distributed over the entire length of the body.

Although I prefer the use of a single spring to a pair of wheels as above described, instead of the ordinary spring to each wheel, and consider it as more simple, cheap, and convenient than any other arrangement; the end which I have in view may, nevertheless, be ob-

tained by constructing the bearing carriages in any of the modes usually practised, provided that the fore and hind wheels of each of them be placed very near together; because the closeness of the fore and hind wheels of each bearing carriage, taken in connection with the use of two bearing carriages coupled remotely from each other as can conveniently be done, for the support of one body, with a view to the objects and on the principles herein set forth, is considered by me as a most important feature of my invention; for, by the contiguity of the fore and hind wheels of each bearing carriage, while the two bearing carriages may be at any desirable distance apart, the lateral friction from the rubbing of the flanches against the rails is most effectually avoided, whilst, at the same time, all the advantages attendant upon placing the axles of a four-wheeled car far apart are thus obtained.

The bearing of the load on the centre of the bolster, which also is the centre of each bearing carriage, likewise affords great relief from the shocks occasioned by the percussions of the wheels on protuberant parts of the rails, or other objects, and from the vibrations consequent to the use of coned wheels; as the lateral and vertical movements of the body of the car, resulting from the above causes are much diminished. The two wheels on either side of one of the bearing carriages may, from their proximity, be considered as acting like a single wheel; and as these two bearing carriages may be placed at any distance from each other, consistent with the required strength of the body of the car, it is evident that all the advantage is obtained which results from having the two axles of a four-wheeled car at a distance from each other, whilst its inconveniences are avoided.

Another advantage of this car compared with those in common use, and which is viewed by me as very important, is the increased safety afforded by it to passengers; not only from the diminished liability to breakage, or derangement in the frame-work, but also from the less disastrous consequences to be apprehended from the breaking of a wheel, axle, or other part of the running gear, as the car-body depends, for its support and safety, upon a greater number of wheels, and bearing points on the road.

I do not claim, as my invention, the running of cars or carriages upon eight wheels, this having been previously done; not, however, in the manner or for the purposes herein described, but merely with a view of distributing the weight carried, more evenly upon a rail, or other road, and for objects distinct in character from those which I have had in view, as hereinbefore set forth. Nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident, as to accomplish this purpose.

What I claim, therefore, as my invention, and for which I ask a patent, is the before described manner of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, so as to accomplish the end proposed by the means set

forth, or by any others which are analogous and dependent upon the same principles.

ROSS WINANS.

G. BROWN,
JNO. H. B. LATROBE, } *Witnesses.*

The plaintiff, further to maintain and prove the said issue on his part, then read in evidence three several indorsements on said letters patent, of which indorsements the following are copies:—

Patent Office. Received 7 June, 1837, and recorded anew in this Office.

H. L. ELLSWORTH,
Commissioner of Patents.

Patent Office, Dec. 28, 1854. Received, Dec. 21, 1854, and, on account of alleged errors in the record, recorded again.

C. MASON,
Commissioner of Patents.

Whereas, upon the petition of Ross Winans, of Baltimore, Md., for an extension of the within patent, granted to the said Ross Winans on the first day of October, 1834, the undersigned, Acting Commissioner of Patents, under the 18th section of the Act of Congress, approved the 4th day of July, 1836, entitled "An act to promote the progress of the useful arts, to repeal all acts heretore made for that purpose," and the act approved 27th May, 1848, entitled "An act to provide additional examiners in the Patent Office, and for other purposes," did, on the 25th day of September, 1848, certify that said patent ought to be extended.

Now, therefore, I, Henry H. Sylvester, Acting Commissioner of Patents, by virtue of the power vested in me by said acts of Congress, do renew and extend said patent, and certify that the same is hereby extended for the term of seven years, from and after the expiration of the first term, viz., the 1st day of October, 1848, which certificate, on the petition of the applicant, together with this certificate of the Acting Commissioner of Patents, having been duly entered of record in the Patent Office, the said patent now has the same effect in law as though the same had been originally granted for the term of twenty-one years.

In testimony whereof, I have caused the seal of the Patent Office to be hereunto affixed, this twenty-fifth day of September, in the year of our Lord one thousand eight hundred and forty-eight, and of the independence of the United States the seventy-third.

[L. S.] HENRY H. SYLVESTER,
Acting Comm'r Patents.

The plaintiff, further to maintain and prove the said issue on his part, then read in evidence, a certificate under the seal of the United

States Patent Office, and the signature of the acting commissioner of Patents, and certain papers annexed to said certificate, of which certificate and papers the following are copies.

The U. States Patent Office. To all persons to whom these presents shall come. Greeting:

This is to certify, that the annexed is a true copy from the records of this office of the record of Letters Patent, issued to Ross Winans, on the first day of October, eighteen hundred and thirty-four, and of the records of the memoranda of two several recordings anew of said Letters Patent, the first of which recordings anew, was made on the 7th of June, 1837. And the second of which recordings anew was made on the 28th of December, 1854, and which memoranda are indorsed on said Letters Patent; and of the record of a certificate of the extension of said Letters Patent, which certificate is indorsed on the said Letters Patent, and of the records of two several decisions or orders in regard to the extension of said Letters Patent, and of the records of a drawing, of written references to said drawing, and of a certificate of an oath in writing, which drawing, which written references, and which certificate were filed in this office on the 19th day of November, 1838. And this is further to certify, that the copy annexed of the specification of said Letters Patent, is made from the record of the said second recording anew of said specification.

In testimony whereof, I, S. T. Shugert, acting commissioner of Patents, have caused the seal of the Patent Office to be hereunto affixed, this thirty-first day of October, in the year of our Lord one thousand eight hundred and fifty-five, and of the Independence of the United States the eightieth.

[L. S.] S. T. SHUGERT.

THE UNITED STATES OF AMERICA.

To all whom these Letters Patent shall come:

Whereas, Ross Winans, a citizen of the United States, hath alleged that he has invented a new and useful improvement in the construction of cars or carriages intended to run upon railroads, which improvement he states has not been known or used before his application; hath sworn that he does verily believe that he is the true inventor or discoverer of the said improvement; hath paid into the Treasury of the United States the sum of thirty dollars, delivered a receipt for the same, and presented a petition to the Secretary of State, signifying a desire of obtaining an exclusive property in the said improvement, and praying that a patent may be granted for that purpose:

These are, therefore, to grant, according to law, to the said Ross Winans, his heirs, administrators or assigns, for the term of fourteen years from the first day of October, one thousand eight hundred and thirty-four, the full and exclusive right and liberty of making, con-

structing, using, and vending to others to be used, the said improvement, a description whereof is given in the words of the said Ross Winans himself, in the schedule hereto annexed, and is made a part of these presents.

In testimony whereof, I have caused these letters to be made patent, and the seal of the United States to be hereunto affixed.

Given under my hand, at the city of Washington, this first day of October, in the year of our Lord one thousand eight hundred and thirty-four, and of the Independence of the United States of America the fifty-ninth.

[L. S.] ANDREW JACKSON.

By the President,

JOHN FORSYTH, *Secretary of State.*

CITY OF WASHINGTON, TO WIT: I do hereby certify, that the foregoing Letters Patent were delivered to me on the first day of October, in the year of our Lord one thousand eight hundred and thirty-four, to be examined, that I have examined the same and find them conformable to law, and I do hereby return the same to the Secretary of State, within fifteen days from the date aforesaid, to wit, on this first day of October, in the year aforesaid.

B. F. BUTLER,
Attorney-General of the United States.

The schedule referred to in these Letters Patent, and making part of the same, containing a description, in the words of the said Ross Winans himself, of his improvement in the construction of cars or carriages intended to run upon railroads:

To all whom it may concern: Be it known, that I, Ross Winans, civil engineer, of the city of Baltimore, in the State of Maryland, have invented a new and useful improvement in the construction of cars or carriages, intended to travel upon railroads: which improvement is particularly adapted to passenger cars, as will more fully appear by an exposition of the difficulties heretofore experienced in the running of such cars at high velocities, which exposition I think it best to give in this specification, for the purpose of exemplifying the more clearly the object of my said improvement.

In the construction of all railroads in this country, which extend to any considerable distance, it has been found necessary to admit of lateral curvatures, the radius of which is sometimes but a few hundred feet; and it becomes important, therefore, so to construct the cars, as to enable them to overcome the difficulties presented by such curvatures, and to adapt them for running with the least friction practicable, upon all parts of the road. The friction to which I now allude is that which arises from the contact between the flanches of the wheels and the rails, which, when it occurs, causes a

great loss of power, and a rapid destruction of, or injury to, both the wheel and the rail, and is otherwise injurious.

The high velocities attained by the improvements made in locomotive engines, and which are not only sanctioned but demanded by public opinion, render it necessary that certain points of construction and arrangement, both in the roads and wheels, which were not viewed as important at former rates of travelling, should now receive special attention. The greater momentum of the load, and the intensity of the shocks and concussions, which are unavoidable, even under the best constructions, are among those circumstances which must not be neglected, as the liability to accident is thereby not only greatly increased, but the consequences to be apprehended much more serious.

The passenger and other cars in general use upon railroads have four wheels, the axles of which are placed from three and a half to five feet apart; this distance being governed by the nature of the road upon which they run, and other considerations.

When the cars are so constructed that the axles retain their parallelism, and are at a considerable distance apart, there is a necessary tendency in the flanches of the wheels to come into contact with the rails, especially on the curvatures of least radius, as the axles then vary more from the direction of the radii. From this consideration, when taken alone, it would appear to be best to place the axles as near to each other as possible, thus causing them to approach more nearly to the direction of the radii of the curves and the planes of the wheels to conform to the line of the rails.

There are, however, other circumstances which must not be overlooked in their constructions. I have already alluded to the increased force of the shocks from obstructions at high velocities; and whatever care may be taken, there will be inequalities in the rails and wheels, which, though small, are numerous, and the perpetual operation of which produces effects which cannot be disregarded. The greater the distance between the axles, while the length of the body remains the same, the less is the influence of these shocks or concussions; and this has led, in many instances, to the placing them, in passenger cars, at or near their extreme ends. Now, however, a compromise is most commonly made between the evils resulting from a considerable separation and a near approach, as, by the modes of construction now in use, one of the advantages must be sacrificed to the other.

But it is not to the lateral curvatures and inequalities of the road alone, that the foregoing remarks apply. The incessant vibration felt in travelling over a railroad is mainly dependent upon the vertical motion of the cars, in surmounting those numerous though minute obstructions which unavoidably exist. The nearer the axles are placed to each other, the greater is the effect of this motion upon the passengers, and the greater its power to derange the machinery and the road. It becomes very important, therefore, both

as regards comfort, safety and economy, to devise a mode of combining the advantages derived from placing the axles at a considerable distance apart, with those of allowing them to be situated near to each other.

It has been attempted, and with some success, to correct the tendency of the flanches to come into contact with the rails on curved and other parts of the road, by making the tread of the wheel conical; and, if the travelling upon railroads was not required to be very rapid, this would so far prove an effectual corrective, as the two rails would find diameters upon the wheels which would correspond with the difference in length, the constant tendency to deviation being as constantly counteracted by this construction; but at high velocities, the momentum of the body in motion tends so powerfully to carry it in a right line, as to cause the wheel on the longer rail to ascend considerably above that part of the cone which corresponds therewith. The consequence of this is a continued serpentine motion, principally, but not entirely, in a lateral direction; nor is this confined to the curved parts of the road, but it exists to an equal or greater extent upon those which are straight, especially when the axles are near to each other, the irregularities before spoken of constantly changing the direct course of the wheels, whilst there is no general curvature of the rails to counteract it. To avoid this effect, and the unpleasant motion and tendency to derangement consequent upon it, an additional motive is furnished for placing the axles at a considerable distance apart.

The object of my invention is, among other things, to make such an adjustment or arrangement of the wheels and axles, as shall cause the body of the car or carriage to pursue a more smooth, even, direct and safe course than it does as cars are ordinarily constructed, both over the curved and straight parts of the road, by the beforementioned desideratum of combining the advantages of the near and distant coupling of the axles and other means to be hereinafter described.

For this purpose, I construct two bearing carriages, each with four wheels, which are to sustain the body of the passenger or other car, by placing one of them at or near each end of it, in a way to be presently described. The two wheels on either side of these carriages are to be placed very near to each other; the spaces between their flanges need be no greater than is necessary to prevent their contact with each other. These wheels I connect together by means of a very strong spring—say double the usual strength employed for ordinary cars—the ends of which springs are bolted, or otherwise secured, to the upper sides of the boxes, which rest on the journals of the axles; the longer leaves of the springs being placed downwards, and surmounted by the shorter leaves. Having thus connected two pairs of wheels together, I unite them into a four-wheel bearing carriage, by means of their axles and a bolster of the proper length, extending across between the two pairs of wheels,

from the centre of one spring to that of the other, and securely fastened to the tops of them. This bolster must be of sufficient strength to bear a load upon its centre of four or five tons. Upon this first bolster I place another of equal strength, and connect the two together by a centre pin or bolt, passing down through them, and thus allowing them to swivel or turn upon each other in the manner of the front bolster of a common road wagon. I prefer making these bolsters of wrought or cast iron; wood, however, may be used. I prepare each of the bearing carriages in precisely the same way.

The body of the passenger or other car I make of double the ordinary length of those which run on four wheels, and capable of carrying double their load.

This body I placed so as to rest its whole weight upon the two upper bolsters of the two before-mentioned bearing carriages or running gear. I sometimes place these bolsters so far within the ends of the body of the car as to bring all the wheels under it; and, in this case, less strength is necessary in the car body than when the bolster is situated at its extreme ends. In some cases, however, I place the bolster so far without the body of the car, at either end, as to allow the latter to hang down between the two sets of wheels, or bearing carriages, and to run, if desired, within a foot of the rails.

When this is done, a strong frame-work projects out from either end of the car or carriage body, and rests upon the upper bolsters of the two bearing carriages. This last arrangement, by which the body of the car is hung so low down, manifestly affords a great security to the passengers, exempting them in a great degree from those accidents to which they are liable when the load is raised. Several bodies may be connected, or rest on a common frame, and be supported on the bearing carriage, in a manner similar to that of a single body.

When the bolsters of the bearing carriages are placed under the extreme ends of the body, the relief from shocks and concussions, and from lateral vibrations, is greater than it is when the bolsters are placed between the middle and the ends of the body; and this relief is not materially varied by increasing or diminishing the length of the body, while the extreme ends of it continue to rest on the bolsters of the bearing cars, the load being supposed to be equally distributed over the entire length of the body.

Although I prefer the use of a single spring to a pair of wheels as above described, instead of the ordinary spring to each wheel, and consider it as more simple, cheap and convenient, than any other arrangement; the end which I have in view may, nevertheless, be obtained by constructing the bearing carriages in any of the modes usually practised, provided that the fore and hind wheels of each of them be placed very near together; because the closeness of the fore and hind wheels of each bearing carriage, taken in connection with the use of two bearing carriages coupled remotely from each other

as can conveniently be done, for the support of one body, with a view to the objects and on the principles herein set forth, is considered by me as a most important feature of my invention; for, by the contiguity of the fore and hind wheels of each bearing carriage, while the two bearing carriages may be at any desirable distance apart, the lateral friction from the rubbing of the flanches against the rails is most effectually avoided, whilst, at the same time, all the advantages attendant upon placing the axles of a four-wheeled car far apart, are thus obtained.

The bearing of the load on the centre of the bolster, which also is the centre of each bearing carriage, likewise affords great relief from the shocks occasioned by the percussions of the wheels on protuberant parts of the rails, or other objects, and from the vibrations consequent to the use of coned wheels; as the lateral and vertical movements of the body of the car, resulting from the above causes are much diminished. The two wheels on either side of one of the bearing carriages may, from their proximity, be considered as acting like a single wheel; and as these two bearing carriages may be placed at any distance from each other, consistent with the required strength of the body of the car, it is evident that all the advantage is obtained which results from having the two axles of a four-wheeled car at a distance from each other, whilst its inconveniences are avoided.

Another advantage of this car compared with those in common use, and which is viewed by me as very important, is the increased safety afforded by it to passengers; not only from the diminished liability to breakage, or derangement in the frame-work, but also from the less disastrous consequences to be apprehended from the breaking of a wheel, axle, or other part of the running gear, as the car-body depends, for its support and safety, upon a greater number of wheels, and bearing points on the road.

I do not claim, as my invention, the running of cars or carriages upon eight wheels, this having been previously done; not, however, in the manner or for the purposes herein described, but merely with a view of distributing the weight carried, more evenly upon a rail, or other road, and for objects distinct in character from those which I have had in view, as hereinbefore set forth. Nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident as to accomplish this purpose.

What I claim, therefore, as my invention, and for which I ask a patent, is the before-described manner of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, so as to accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles.

ROSS WINANS.

G. BROWN,
JNO. H. B. LATROBE, } *Witnesses.*

Patent Office. Received 7th June, 1837, and recorded anew in this Office.

H. L. ELLSWORTH,
Commissioner of Patents.

Patent Office, Dec. 28, 1854. Received, Dec. 21, 1854, and, on account of alleged errors in the record, recorded again.

C. MASON,
Commissioner of Patents.

In the matter of the application of Ross Winans for an extension of his patent for improvements in railroad cars and carriages, dated October 1st, 1834.

The third Monday in September, 1848 (25th), having been appointed for hearing the application of the said Ross Winans, the undersigned, agreeably to published notice, and after examining the evidence adduced by the petitioner, decided that said patent ought to be extended.

H. H. SYLVESTER,
Acting Comm'r of Patents.

Sept. 25, 1848. The petition and testimony of the said Ross Winans having been fully examined, it is ordered that his patent be extended.

H. H. SYLVESTER,
Act'g Com'r.

Whereas, upon the petition of Ross Winans, of Baltimore, Md., for an extension of the within patent, granted to the said Ross Winans on the first day of October, 1834, the undersigned, Acting Commissioner of Patents, under the 18th section of the Act of Congress, approved the 4th day of July, 1836, entitled "An act to promote the progress of the useful arts, to repeal all acts heretofore made for that purpose," and the act approved 27th May, 1848, entitled "An act to provide additional examiners in the Patent Office, and for other purposes," did, on the 25th day of September, 1848, certify that said patent ought to be extended:

Now, therefore, I, Henry H. Sylvester, Acting Commissioner of Patents, by virtue of the power vested in me by said acts of Congress, do renew and extend said patent, and certify that the same is hereby extended for the term of seven years, from and after the expiration of the first term, viz: the first day of October, 1848, which certificate, on the petition of the applicant, together with this certificate of the Acting Commissioner of Patents, having been duly entered of record in the Patent Office, the said patent now has the same effect in law as though the same had been originally granted for the term of twenty-one years.

In testimony whereof, I have caused the seal of the Patent Office

to be hereunto affixed, this twenty-fifth day of September, in the year of our Lord one thousand eight hundred and forty-eight, and of the Independence of the United States the seventy-third.

[L. S.] HENRY H. SYLVESTER,
Acting Comm'r Patents.

References to the annexed drawings of Ross Winans' improvement in the construction of cars or carriages intended to run on railroads, for which letters patent were issued, dated October 1st, 1834:

Fig. 1.—Side view of an eight-wheel car.

Fig. 2.—End view of the same.

Fig. 3.—Upper and lower bolster detached from the body and bearing carriage.

A A, represents the body of the car resting on the bearing carriages B and C, as exhibited at D D, on pivots equi-distant from the wheels of each bearing carriage.

H represents an upper bolster of cast-iron, separate from the body of the car, with its pivot X corresponding with the socket Y in the lower bolster E, also shown as separated from the bearing carriage.

State of Maryland, Baltimore City, ss.

On this nineteenth day of November, in the year eighteen hundred and thirty-eight, before me, the subscriber, a justice of the peace of the said State, in and for the said city, personally appeared Ross Winans, and made solemn oath that he is the inventor of an improvement in the construction of cars or carriages intended to run on railroads, for which letters patent of the United States were granted to him the first day of October, 1834, and that the annexed drawing is, as he verily believes, a true delineation of the invention, as described in the said letters patent.

Sworn before JAMES BLAIR,
Justice of Peace.

[For drawing, see original.]

In the course of the trial the defendants offered to read in evidence, to maintain and prove the said issue on their part, the deposition of one Conduce Gatch, given by him as a witness for the defendants at Baltimore, in the State of Maryland, on the 2d day of January, in the year of our Lord one thousand eight hundred and fifty-six, under a commission duly issued in this cause to one John Hanan, of said Baltimore, as a commissioner to examine said Gatch and others as witnesses for the defendants, on interrogatories and cross-interrogatories annexed to said commission. Said deposition consisted of one hundred and sixty-six direct interrogatories on the part of the defendants to said Gatch, and of one hundred and three cross-interrogatories on the part of the plaintiff to said Gatch, and of the answers

of said Gatch to said direct interrogatories and to said cross-interrogatories, and of three additional direct interrogatories on the part of the defendants to said Gatch, and of three additional cross-interrogatories on the part of the plaintiff to said Gatch, and of the answers of said Gatch to said additional direct interrogatories and to said additional cross-interrogatories, a copy of which commission, direct interrogatories, cross-interrogatories, additional direct interrogatories, additional cross-interrogatories, answers and deposition is hereto annexed, marked *A*.

The copy of the answers of said Gatch in the case of Winans against the New York and Harlem Railroad Company, referred to in the answer of said Gatch to the one-hundredth cross-interrogatory in said deposition, was not nor was any copy of such copy annexed to said deposition, nor was there in said deposition any answer of said Gatch to any part of said one hundred and second cross-interrogatory, other than the said answer to said one hundred and second cross-interrogatory.

The plaintiff thereupon, on the trial for the first time, and without notice, on the offering of said deposition 3½ months after it was returned, 21 days after the same had been filed, 14 days after the same had been opened in court, and on the 14th day of the trial, having first read in evidence a stipulation endorsed on said commission, of which the following is a copy:—

The annexed interrogatories and cross-interrogatories to the witnesses named in the within commission are hereby allowed, with the same force and effect as if an allowance of the same respectively by a Judge of this Court were endorsed on the same respectively, subject, however, to all and every objection and exception which may be taken by either party at the trial of said cause, to the relevancy, competency, form, or materiality of any one of the said interrogatories and cross-interrogatories.

Dated September 27th, 1855.

EATON & DAVIS,
Def't's Att'ys.

BLATCHFORD, SEWARD & GRISWOLD,
Pl'ff's Att'ys.

Objected to the reading in evidence of the whole and of each and every part of said deposition of said Gatch, on the ground that said Gatch was called upon, by said one hundred and second cross-interrogatory, to annex to his said deposition a correct copy of the *copy of the* answers of said Gatch in the case of Winans against the New York and Harlem Railroad Company, referred to in the said answer of said Gatch to said one hundredth cross-interrogatory, and had not done so; and that in the said specified particular of not annexing the same, said one hundred and second cross-interrogatory was not fully answered by said Gatch. But the Court overruled said

objection, and allowed said deposition of said Gatch to be read in evidence by said defendants; and said deposition of said Gatch was read in evidence by said defendants, to which said overruling and allowing, and to which said reading in evidence of said deposition of said Gatch, the plaintiff then and there duly and in due time excepted.

In the course of the trial, the plaintiff, to maintain his action, and the defendants, to maintain their defence, respectively gave both affirmative and rebutting evidence, tending to prove or disprove the several allegations made, and other matters relied upon by the respective parties, and which were in controversy in this suit.

After the defendants had rested their case, and after the plaintiff had thereafter put in a part of his evidence in reply, the plaintiff made to the Court the following offer to prove the facts and matters stated in said offer, namely:

"First. The plaintiff, by his counsel, offers to prove, that the action of coned wheels, specified in the Patent, requires the wheels to be fast on, and turn with their axles. That at the time the plaintiff's Patent was granted, it was the general practice, in constructing cars for running at high velocities, to construct them with coned wheels, fast on and turning with their axles, and that non-coned wheels, or coned wheels turning on their axles, are not equivalent for, and cannot produce the effects described in the Patent as peculiar to the use of coned wheels."

The defendants objected to the proving of any of the facts and matters stated in said offer, on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said offer, to which sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:

"Secondly. The plaintiff, by his counsel, offers to prove, that the end proposed in the specification of the plaintiff's Patent cannot be effected by a car having two swivelling four-wheeled tracks connected with a body or platform unless the wheels of the bearing carriages are coned on their treads, and are fast on, and turn with their axles."

The defendants objected to the proving of any of the facts and matters stated in said last mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last mentioned offer, to which last mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:

"Thirdly. The plaintiff, by his counsel, offers to prove, that

there is a combined and mutual mechanical action and dependence between the use of coned wheels, fast on and turning with their axles, in the two bearing carriages and the connection of the bearing carriages at, near, or beyond the ends of the body, in the manner of the front bolster of a common road wagon; and that such combined and mutual action and dependence are essential to cause the body of the car to pursue a more smooth, even, direct and safe course, both over the curved and straight parts of the road."

The defendants objected to the proving of any of the facts and matters stated in said last mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last mentioned objection, and refused to allow the plaintff to prove any of the facts and matters stated in said last mentioned offer, to which last mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:—

"Fourthly. The plaintiff, by his counsel, offers to prove that there is a combined and mutual mechanical action and dependence between the use of coned wheels fast on and turning with their axles, and wheel springs connecting the axles with the bearing carriages; and that this combined and mutual action, and dependence are essential, to enable the car or carriage to pursue a more smooth, even, direct, and safe course, both over the curved and straight parts of the track."

The defendants objected to the proving of any of the facts, and matters stated in said last-mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last-mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last-mentioned offer to which last-mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:—

"Fifthly. The plaintiff, by his counsel, offers to prove that there is a combined and mutual mechanical action and dependence between the use of coned wheels fast on, and turning with their axles, and the connection of such axles with the bearing carriages, by means of wheel springs, and the connection of the bearing carriages at, near, or beyond the ends of the body, in the manner of the front bolster of a common road wagon; and that such combined and mutual action and dependence are essential to cause the body of the car or carriage to pursue a more smooth, even, direct, and safe course, both over the curved and straight parts of the track."

The defendants objected to the proving of any of the facts and matters stated in said last-mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant; and the Court sustained said last-mentioned objection, and refused to allow

the plaintiff to prove any of the facts and matters stated in said last-mentioned offer, to which last-mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:—

"Sixthly. The plaintiff, by his counsel, offers to prove that wheel springs, interposed between the axles and the bearing carriages, are not equivalents for springs interposed between the bearing carriages and the body of the car or carriage, and produce a different mode of operation in the running of the car, or carriage, both over the straight and curved parts of the road."

The defendants objected to the proving of any of the facts and matters stated in said last-mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant; and the Court sustained said last-mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last-mentioned offer, to which last-mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely:—

"Seventhly. The plaintiff, by his counsel, offers to prove, that a railroad car or carriage consisting of two swivelling four-wheeled bearing carriages, having coned wheels fast on and turning with their axles, and connected with such bearing carriages by wheel springs, and with the bearing carriages connected with the body at, near, or beyond its ends by a central bearing in the manner of the front bolster of a common road wagon, is substantially different, and has a different mode of operation in running both upon the curved and straight parts of the track, from a car or carriage which consists of two swivelling four-wheeled tracks, the wheels of which turn on their axles; and which has no wheel springs, or any equivalents therefor; and that it required invention to pass from the latter to the former."

The defendants objected to the proving of any of the facts and matters stated in said last mentioned offer, on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last mentioned offer, to which last mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely—

"Eighthly. The plaintiff, by his counsel, offers to prove, that the description of the invention in the plaintiff's patent requires by its terms the wheels to be coned, and to be fast on, and turn with their axles, and the axles to be connected with the bearing carriages by means of interposed wheel springs."

The defendants objected to the proving of any of the facts and

matters stated in said last mentioned offer on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last mentioned offer, to which last mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The plaintiff then made to the Court the following offer to prove the facts and matters stated in said offer, namely—

"Ninthly. The plaintiff, by his counsel, offers to prove, that the description of the invention in the plaintiff's patent requires, by its terms, the wheels to be coned, and to be fast on and turn with their axles."

The defendants objected to the proving of any of the facts and matters stated in said last mentioned offer on the ground that all of said facts and matters were immaterial and irrelevant, and the Court sustained said last mentioned objection, and refused to allow the plaintiff to prove any of the facts and matters stated in said last mentioned offer, to which last mentioned sustaining and refusal the plaintiff then and there duly and in due time excepted.

The evidence having been closed, the Court then charged the jury as follows:—

First. The patent itself is *prima facie* evidence of the novelty and utility of the invention patented. The issuing of the patent is also *prima facie* evidence that the specification, when delivered, was accompanied by drawings and written references thereto, as then required by statute. So also the patent, and the certified copy of the record thereof, in December, 1854, and the certified copy of the drawings deposited by the patentee in the Patent Office, on the 19th November, 1838, with the references thereon, are, under the provisions of the act of Congress of March 3d, 1837, *prima facie* evidence of the particulars of the invention patented.

Second. It can hardly be necessary to occupy the time of the jury upon the question of utility, for the reason that, if the jury find the plaintiff's patent to be valid, and that the defendant has infringed, they will, it is believed, have no difficulty in reaching the conclusion that the invention claimed by the plaintiff was put in use by the defendant, because such use was known to be advantageous. On the question of novelty I shall presently give other instructions.

Third. It is necessary that you should understand what the plaintiff claims as his invention; that is, what is covered by the terms of the claim contained in his specification. The plaintiff by his specification, does not claim to be the first inventor of the first railroad car or carriage run upon eight wheels, nor does he claim to be the discoverer of the different effects produced by the near and by the remote position of the wheels of an ordinary four wheeled car. He admits by his specification that the different effects produced by these different positions of the wheels in a four wheeled car were known, and he also admits that the knowledge that the placing of the axles of such

wheels comparatively near together enabled the car to pass curves of short radius with the least friction, but, at the same time rendered it less suited to the attainment of the steadiness of motion desired, together with the knowledge that the remote position of such wheels gave greater steadiness of motion to the car, and greater relief from the lateral and vertical vibrations, and the frequent shocks and concussions caused by minute obstructions and irregularities on the track had caused the adoption, in the modes of construction then in use, of a compromise in regard to the distance between the fore and hind wheels of the four wheeled car; which compromise he says was then most commonly made between the evils resulting from a considerable separation and a near approach of the wheels of the four wheeled car.

He then says, that by the modes of construction then in use, one of these advantages of position of wheels *must* be sacrificed to the other; by which, and by the statement in regard to the usual compromise, he is understood to mean that no mode of construction then in public use would allow the full advantages of both these positions of the wheels (the near and the remote) to be attained at the same time, and that, in practice, a part of the advantages resulting from each position was (by the compromise in regard to the distance between the wheels, adopted in the modes of construction then in use), *necessarily* sacrificed, in order to obtain part of the advantages of the other position. He afterwards, in stating the object of his invention, informs us that he seeks to attain that object by the before mentioned *desideratum* of combining the advantages of the near and distant coupling of the axles, and other means, to be thereinafter described. He then describes the means by which this *desideratum* is to be obtained; the construction of two bearing carriages, each with four wheels; the two wheels upon each side of these carriages to be placed very near each other, there being no necessity that the spaces between the flanges should be greater than is necessary to prevent their contact; the placing upon these bearing carriages of a bolster of proper length, extending across between the two pairs of wheels; the placing on the top of this lower bolster of another of equal strength, and connecting the two together by a centre pin or bolt, passing down through them, and thus allowing them to swivel and turn upon each other, in the manner of the front bolster of a common road wagon; the placing of the body of a passenger or other car, of double the ordinary length of those used upon four wheels, so as to rest its whole weight upon the two upper bolsters of the two bearing carriages, at, near, or beyond the ends of the car body, so that such weight shall be borne substantially upon the central portion of the bolsters, being also the central portion of the bearing carriages.

To so much of the foregoing charge as commences with the words "He then describes," and ends with the words "of the bearing carriages," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

His disclaimer, which follows, is in this language:—

"I do not claim as my invention the running of cars or carriages upon eight wheels, this having been previously done: not, however, in the manner or for the purposes herein described, but merely with a view of distributing the weight carried more evenly upon a rail or other road, and for objects distinct in character from those which I have had in view, as hereinbefore set forth; nor have the wheels, when thus increased in number, been so arranged and connected with each other, either by design or accident, as to accomplish this purpose."

This disclaimer excludes from his subsequent claim no mode of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, except those modes where the use of eight wheels was adopted merely with the view of distributing the weight carried more evenly upon a rail or other road, and for objects distinct in character from those of enabling a car with a comparatively long body to turn curves with facility and safety, and with less friction.

To so much of the foregoing charge as commences with the words "This disclaimer excludes" and ends with the words "with less friction," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"His subsequent claim furnishes a further limit to the invention claimed, and this claim embraces, by its specific language and express terms, the *manner* of arranging and connecting the eight wheels which constitute the two bearing carriages, with a railroad car, before described in the plaintiff's specification, by the means set forth, or any others which are analogous and dependent on the same principles; and it embraces nothing more."

To so much of the foregoing charge as commences with the words "His subsequent claim" and ends with the words "Embraces nothing more," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"Therefore, according to the import and true construction of the plaintiff's patent and specification, he claims to be the first inventor of 'a new and useful improvement in the construction of cars and carriages intended to travel upon railroads,' which improvement consists in *the manner of arranging and connecting* the eight wheels, which constitute the two bearing carriages, with a railroad car, the object of which is to make such an adjustment of the wheels, axles and bearings of the car as shall enable a car with a comparatively long body to pass curves with greater facility and safety and less friction, and as shall at the same time cause the body of the car to pursue a more smooth, even, direct and safe course over the curvatures and irregularities, and over the straight parts of the road."

To so much of the foregoing charge as commences with the words

"Therefore, according," and ends with the words "parts of the road," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charges as follows:—

"Fourth. *The manner* of such arrangement and connection is to place upon the upper bolsters of two bearing carriages, each having four wheels, with the flanges of each pair of wheels very near together, the body of a car so as to rest its weight and have the bearing of the load upon the centre or central portion of the bolsters, being also the centre or central portion of the bearing carriages; the bolsters of the bearing carriages and car body respectively being connected by centre pins or bolts, so as to allow them to swivel and turn upon each other, in the manner of the front bolster of a common road wagon, and the bolsters being placed at, near, or beyond the ends of the body."

To so much of the foregoing charge as commences with the words: "Fourth. The manner," and ends with the words, "ends of the body," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"And the closeness of the fore and hind wheels of each of the two bearing carriages coupled as remotely from each other as may be desired, or can conveniently be done, for the support of one body, is a most important feature of the invention, with a view to the objects and on the principles set forth in the specification."

To so much of the foregoing charge as commences with the words, "And the closeness," and ends with the words, "in the specification," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"Fifth. The patentee does not claim to be the inventor of a car body (either for freight or for passengers) of a new or peculiar construction in size or form, nor of any single and wholly separate part of the entire car; but he claims, as his invention, *the manner* of arranging and connecting the eight wheels which constitute the two bearing carriages, with a railroad car, in the mode and by the means described in his specification, for the ends before described, whether such railroad car is adapted to the transportation of freight or of passengers."

To so much of the foregoing charge as commences with the words, "but he claims as his invention," and ends with the words, "or of passengers," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"The leading principle set forth in the specification, upon which the arrangement and connection act, to effect the objects aimed at, is that by the contiguity of the fore and hind wheels of each bearing carriage, and the swivelling motion of the trucks or bearing carriages, the planes of the flanges of the wheels conform more nearly to the line of the rails and the lateral friction of the flanges on the rails, while entering, passing through, and leaving curves, is thereby di-

minished; while at the same time, in consequence of the two bearing carriages being arranged and connected with the body of a passenger or burthen car by means of the king bolts or centre pins and bolsters, placed as remotely from each other as may be desired or can be conveniently done, and with the weight bearing upon the *central* portion of the bolsters and bearing carriages, the injurious effects of the shocks and concussions received from slight irregularities and imperfections of the track, and other minute disturbing causes, are greatly lessened."

To so much of the foregoing charge as commences with the words, "the leading principle," and ends with the words, "are greatly lessened," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"Sixth. The plaintiff has then clearly and distinctly claimed *the manner* of arranging and connecting the eight wheels, which constitute the two bearing carriages, with a railroad car, described in his specification, so as to accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles, and he has not, by the disclaimer, in his specification, or otherwise, circumscribed or limited this claim by admitting the previous use or disclaiming the invention of the mode of connecting and arranging the eight wheels in two bearing carriages or trucks of four wheels each, with a car body or platform, by means of bolsters and centre pins or bolts, allowing these trucks to swivel upon their centres, so as to suit the lateral curves of the railroad, and also to run upon the straight track, and also allowing a railroad car body of any convenient length, consistent with the required strength of such body, to be run upon such bearing carriages upon curves of short radius, thus rendering unnecessary the compromise which the patentee represents in his specification it was, prior to his invention, *necessary* to make."

To so much of the foregoing charge as commences with the words: "Sixth. The plaintiff," and ends with the words "necessary to make," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"If the patentee intended to claim only the exclusive *centre* bearing, and an unusual or previously unknown proximity of the wheels on either side of the separate bearing carriages, or either of these features separately, he should have limited his claim to the particular features or feature intended to be claimed; or if he intended to take a patent for a combination only, he should have expressly claimed the invention of such combination, and should have pointed out clearly and exactly the elementary parts of such combination. He has done neither."

To so much of the foregoing charge as commences with the words, "If the patentee," and ends with the words, "He has done neither," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"Nor has he by the terms of his disclaimer and claim, when considered in connection with those parts of the specification which necessarily exclude the conclusion that the patentee knew or intended to admit that railroad cars, running on two four-wheeled swivelling trucks, were generally known to the public, or known to those interested in their adoption and use, or even when these are considered in connection with the evidence showing the use, to some extent, of such railroad cars, limited his claim to the form, substance, mechanical properties, functions, or action, of any number, less than the whole, of the separate parts or devices which, by their united mechanical action in the arrangement and connection claimed as his invention, give effect and utility as well as the peculiar character and distinguishing principle to such arrangement and connection."

To so much of the foregoing charge as commences with the words, "nor has he," and ends with the words "and connection," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows:—

"He therefore embraces in this claim of his improvement the use of two four-wheeled swivelling trucks, so arranged and so connected to the body of a car as to allow the trucks when used under, or at or near the ends of a car body, at any convenient distance from each other, to adapt themselves to the lateral curves of the road."

To so much of the foregoing charge as commences with the words, "He therefore embraces," and ends with the words "curves of the road," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge as follows.

"And, therefore, if you find as a fact what I understand is conceded in this case, that the use of two four-wheeled swivelling trucks, so arranged and so connected to the body of a car as to allow the trucks, when used under, or at or near the ends of a car body, at any convenient distance from each other, to adapt themselves to the lateral curves of the road is absolutely necessary to an organization constituting the arrangement and connection claimed by the plaintiff, and having the capacity to operate upon the principles of the invention claimed (as such claim is construed by this Court) in order to attain to any useful extent the objects stated in the plaintiff's specification; and if you shall also find as a fact that cars constructed with the body of such length as to rest upon bolsters, remotely placed at or near the ends of the car body, and the lower bolsters resting upon two four-wheeled trucks, swivelling upon their centres, so as to adapt themselves to the lateral curvatures of a railroad, by means of the use of such bolsters, connected by and swivelling upon centre pins or king bolts, were known and in public use in the United States prior to the time of the alleged invention, then the jury must find a verdict for the defendants, whether such trucks were constructed with or without a spring to each wheel, or whether the wheels thereof were coned or cylindrical upon their threads, or revolved with, or were

loose upon their axles, because the plaintiff having suffered both the original and extended terms of his patent to expire, without having filed in the Patent Office, according to the provisions of the seventh section of the Act of March 3d, 1837, a disclaimer of part of the thing claimed and patented as new, and still claiming in this suit to be the first inventor of everything which he claims as new in his patent is precluded from claiming the benefits conferred under certain circumstances by the provisions of said seventh section, and because if the specification of the plaintiff's claim is too broad, and he thereby claims to be the first inventor of what was old and in public use before his alleged discovery or invention, and which is absolutely necessary to an organization constituting the arrangement and connection claimed by the plaintiff as his invention, and having the capacity to operate upon the principles of the invention claimed by the plaintiff, he is not entitled to recover in this action, although some substantial part of the invention claimed, or some new combination of mechanical powers or devices described in the patent, may have been first invented or discovered by the plaintiff."

To so much of the foregoing charge as commences with the words, "And therefore," and ends with the words, "by the plaintiff," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in its charge, as follows:—

"Seventh. I do not deem it necessary to do so, but at the suggestion of the counsel, will add that, bearing carriages constructed in any of the modes usually practised at the date of the patent (being except in regard to the required close proximity of the two wheels on either side of the bearing carriages, the bearing carriages which constitute or are embraced in what have been called the alternative modes of construction), having been in common use at the date of such patent, and that fact appearing on the face of the specification, it was unnecessary to describe particularly the mode of constructing such bearing carriages, or the other elements which form portions of the car containing the arrangement and connection which the plaintiff claims to have invented, if such other elements were well known and in common use; and as the patentee specifies, what he claims as new to be *the before described manner of arranging and connecting the eight wheels which constitute the two bearing carriages, with a railroad car*, every mechanical part, principle, or combination which he mentions in his specification, but which are not included in his invention, as claimed and limited, as before stated must, by necessary implication be considered as admitted to be old, or in use before; and the patent is therefore not invalid, because the patentee has not in express words particularly stated them to be old, nor described the particular manner of their construction."

To so much of the foregoing charge as commences with the words, "And as the patentee," and ends with the words "of their construction," the plaintiff then and there duly and in due time excepted.

The Court then proceeded in and concluded its charge as follows:—

"Eighth. It being conceded in this case, that the defendant has not used the long, single spring described in the plaintiff's specification as part of the means, in one mode of construction, of connecting the two wheels on either side of the bearing carriages, it is not now material or necessary to determine that said long spring is or is not claimed as a part of the plaintiff's invention; but at the request of the plaintiff's counsel, I shall express my opinion upon that question, and my opinion is, that it is not so claimed."

The plaintiff then prayed the court to instruct the jury as follows:—

"1st. That, according to the true construction of the plaintiff's patent, he claims as his invention the organized car as a whole or entirety: which whole or entirety consists in the manner of arranging and connecting with the railroad car the eight coned wheels, which are fast on and turn with their axles; that the said manner of arranging the eight wheels, refers to the described manner of combining the advantages of the near and distant coupling of the axles, by placing the axles in each of the bearing carriages so close to each other as to pass freely over the curved as well as the straight parts of the road, and by coupling the two bearing carriages with a railroad car body of at least the ordinary length of the body of the four-wheeled car, used on the railroads of the United States, at the time of the grant of the patent, and capable of carrying double its load, at, near, or beyond the ends of such body; and that the said manner of connecting the eight wheels, which constitute the two bearing carriages with the said railroad car, refers to the connection of the axles with the bearing carriages, by wheel springs, and of the bearing carriages with the railroad car, in the manner of the front bolster of a common road wagon; all these features being combined into one whole structure, so as to accomplish the end proposed, by the means set forth, or by any others which are analogous and dependent upon the same principles."

But the Court refused to charge or instruct the jury in accordance with said prayer, and also refused to alter in that respect the said charge already given, to each of which two refusals separately the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:

"2d. That according to the true construction of the plaintiff's patent, he claims as his invention, the organized car as a whole or entirety, which whole or entirety consists in the manner of arranging and connecting with the railroad car the eight coned wheels, which are fast on and turn with their axles; that the said manner of arranging the eight wheels refers to the described manner of combining the advantages of the near and distant coupling of the axles, by placing the axles in each of the bearing carriages so close to each other as to pass freely over the curved as well as the straight parts of the road, and by coupling the two bearing carriages with a

railroad car body of at least double the ordinary length of the body of the four-wheeled car, used on the railroads of the United States, at the time of the grant of the patent, and capable of carrying double its load at, near, or beyond the ends of such body; and that the said manner of connecting the eight wheels, which constitute the two bearing carriages, with the said railroad car, refers to the connection of the bearing carriages with said railroad car in the manner of the front bolster of a common road wagon—all these features being combined into one whole structure, so as to accomplish the end proposed, by the means set forth, or by any others which are analogous and dependent upon the same principles."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals separately the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:

"3d. That according to the true construction of the plaintiff's patent, he claims as his invention, an improvement on the four-wheeled car, used on the railroads of the United States, for the transportation of passengers at high velocities at the time of the grant of the patent, which improvement consists in arranging and connecting the bearing carriages of two of such four-wheeled cars, at, near, or beyond the ends of a body of at least double the ordinary length of such four-wheeled car, and capable of carrying double its load, such bearing carriages having coned wheels, fast on parallel axles and turning with such axles, and such axles being connected with such bearing carriages by means of wheel springs, and such bearing carriages being connected with the body of the car in the manner of the front bolster of a common road wagon."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals, separately, the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:

"4th. That according to the true construction of the plaintiff's patent, he claims as his invention, an improvement on the four-wheeled car, used on the railroads of the United States, for the transportation of passengers at high velocities, at the time of the grant of the patent, which improvement consists in arranging and connecting the bearing carriages of two of such four-wheeled cars at, near, or beyond the ends of a body of at least double the length of such four-wheeled car, and capable of carrying double its load, such bearing carriages having coned wheels fast on parallel axles, and turning with such axles, and such bearing carriages being con-

nected with the body of the car, in *in* the manner of the front bolster of a cannon road wagon."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals separately, the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:—

"5th. That according to the true construction of the plaintiff's patent, he claims as his invention an improvement in railroad cars, consisting of the combination of:

1. Coned wheels, fast on and turning with their axles.

2. Wheel springs connecting the axles with the two bearing carriages.

3. Two bearing carriages connected with a railroad car body, at least double the ordinary length of the body of the four wheeled car used on the railroads of the United States at the time of the grant of the patent, and capable of carrying double its load at, near, or beyond the ends of such body, in the manner of the front bolster of a common road wagon, so that the said bearing carriages shall be free to yield to the vibrations horizontally, and vertically due to the curves and inequalities of the road, and to the vibrations due to the use of coned wheels, and thereby accomplish the end proposed by the means set forth, or by any others which are analogous and dependent upon the same principles."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals separately, the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:—

"6th. That according to the true construction of the plaintiff's patent, he claims as his invention an improvement in railroad cars, consisting of the combination of:

1. Coned wheels, fast on and turning with their axles.

2. Two bearing carriages connected with a railroad car body, at least double the ordinary length of the body of the four wheeled car used on the railroads of the United States, at the time of the grant of the patent, and capable of carrying double its load, at, near, or beyond the ends of such body, in the manner of the front bolster of a common road wagon; so that the said bearing carriages shall be free to yield to the vibrations horizontally and vertically, due to the curves and inequalities of the road, and to the vibrations due to the use of coned wheels, and thereby accomplish the end proposed, by the means set forth, or by any others which are analogous and dependent upon the same principles."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals separately, the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:—

"7th. That according to the true construction of the plaintiff's patent, he claims as his invention the arrangement, and construction and adjustment of the eight wheeled car, as described in his specification as a whole; that he claims no right as inventor to any of the constituent parts of the car—the wheels, the axles, the peculiar construction or framing of the running gear of the bearing carriages, the contrivances by which the bearing carriages are connected together, the springs, the bolsters, the turning of the trucks upon their centres or the swivelling of the trucks. But that what he claims as his invention, is the construction and arrangement, and adjustment of these various parts into a car as a whole, combining the advantages which he has set forth in his specification."

But the Court refused to charge or instruct the jury in accordance with said last mentioned prayer, and also refused to alter in that respect the said charge already given, to each of which last mentioned two refusals separately, the plaintiff then and there duly and in due time separately excepted.

The plaintiff then prayed the Court to instruct the jury as follows:—

"8th. That the two bearing carriages mentioned in the specification of the patentee, and the other elements which form portions of the car which he claims to have invented, having been well known and in common use, it was unnecessary to describe particularly the mode of their construction, and that, as he specifies what he claims as new every other mechanical principle or combination which he mentions in his specification, and which form component parts of the car of which he claims to be the inventor, must, be necessary implication, be considered as admitted to be old, or to have been in use before, and that the patent therefore is not invalid, because he has not in express words stated them to be old, nor described the manner of their construction."

But the Court refused to charge the jury in the specific terms of said last mentioned prayer, and stated to the jury that in the said charge already given, the Court had intended to state the rule to be applied in this case in order to determine what was admitted to be old or claimed as new by the terms of the plaintiff's specification, and that the Court therefore refused to charge the jury in the specific terms of said last mentioned prayer, to which last mentioned refusal, and to which last mentioned statement separately, the plaintiff then and there duly and in due time separately excepted.

The jury then retired under the charge aforesaid to consider of their verdict, and on the 17th day of July, 1856, returned into court, and rendered a verdict for the defendants.

And inasmuch as the said several matters so excepted to on the part of the plaintiff, and the said exceptions so taken by him do not appear by the record of the verdict aforesaid, the counsel for the plaintiff did then and there propose his aforesaid exceptions, and requested the said Judge to put his seal to this bill of exceptions, containing the said several matters and exceptions, and thereupon the said Judge, at the request of the said plaintiff, did put his seal to this bill of exceptions on the seventeenth day of July, in the year of our Lord one thousand eight hundred and fifty-six.

N. K. HALL, [L. S.]

Schedule A.

The President of the United States of America, to John Hanan, Esq. (U. S. Commissioner), Baltimore, Maryland, greeting:

Know ye, that we, in confidence of your prudence and fidelity, have appointed you Commissioner, and by these presents do give you, John Hanan, full power and authority diligently to examine upon their several corporal oaths or affirmations, before you to be taken, and upon the interrogatories and cross-interrogatories hereunto annexed, Conduce Gatch, Henry Shultz, Leonard Forrest, William S. Woodside, Lewis M. Cole, James Menzies, Thomas McMechen, Joshua J. Atkinson, William Woodville, George Brown, Philip E. Thomas, John Rupp, Edward Gillingham, William Hughes, John M. Eichelberger, Edward May, Jacob Rupp; and additional interrogatories, and cross-interrogatories, to John M. Eichelberger, Conduce Gatch, Jacob Rupp, Leonard Forrest, Joshua J. Atkinson, as witnesses on the part of the defendant in a certain cause now pending undetermined in the Circuit Court of the United States of America, for the Northern District of New York, wherein Ross Winans is plaintiff, and the New York and Erie Railroad Company is defendant, and we do hereby require you, said John Hanan, before whom such testimony may be taken, to reduce the same to writing, and to close it up under your hand and seal directed to Augustus A. Boyce, Esq., Clerk of this Court, at Utica, Oneida County, New York, as soon as may be convenient after the execution of this commission; and that you return the same, when executed, as above directed, with the title of the cause endorsed on the envelope of the commission, by mail, addressed to Augustus A. Boyce, Clerk of this Court at Utica, Oneida County, New York.

Witness the Honorable Roger B. Taney, Chief Justice of the Supreme Court of the United States, at the city of Utica, this 28th

day of September, in the year of our Lord one thousand eight hundred and fifty-five, and of our Independence the eightieth.

A. A. BOYCE,
Clerk.

[L. S.]

EATON & DAVIS,
Defendants' Attorneys,
110 *Broadway, New York City.*

The execution of this commission appears in certain schedules hereunto attached.

JOHN HANAN,
Commissioner.

CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

ROSS WINANS
against
THE NEW YORK AND ERIE RAILROAD COMPANY.

Interrogatories to be administered to Conduce Gatch, of or near the City of Baltimore, State of Maryland, a witness to be produced, sworn (or affirmed) and examined, under and by virtue of the annexed commission, before John Hanan, United States Commissioner, residing at (or near) Baltimore, in the State of Maryland, the commissioner therein named, in a certain cause now pending and at issue in the Circuit Court of the United States, for the Northern District of New York, wherein Ross Winans is plaintiff, and the New York and Erie Railroad Company is defendant—on the part and behalf of the defendant.

First Interrogatory. What is your name, age, and occupation, and where do you now reside? Do you know the parties, or either of them, and which of them, and how long have you known them, and which of them?

Second Int'y. State when your employment for the Baltimore and Ohio Railroad Company commenced, and when it terminated?

Third Int'y. State in what duties or work you were employed, or spent your time, when in the employ of said company, and where or at what place or shop you were so engaged?

Fourth Int'y. Name the persons, or as many as you can now recollect, who worked upon cars, in the construction and repair of them, at the Mount Clare shops, in 1830 and 1831, and state the time when each commenced work?

Fifth Int'y. Will you name all the persons you have mentioned who are dead, to your knowledge?

Sixth Int'y. Will you state who had the superintendence or direction of the workmen you have named in relation to their work in the shops?

Seventh Int'y. State what kind of work Francis A. Gatch did, and who else worked with him in the same shop?

Eighth Int'y. Will you state what kind of work Michael Glenn did, and where he did his work?

Ninth Int'y. Will you state what kind of work Plummer Sank and Isaiah Terry did, and where they did their work?

Tenth Int'y. Will you state where Oliver Cromwell, C. Baker, Reuben Aler, and Emanuel Eichelberger, and John Rupp worked, in which shop, or at what place, and with whom?

Eleventh Int'y. State what kind of a shop it was, and what kind of work they did: that is, the shop in which C. Baker, Reuben Aler, Emanuel Eichelberger, and John Rupp worked.

Twelfth Int'y. Will you describe what kind of cars were built at those shops at Mount Clare in 1830? Give a full description of them, how they were used to haul long timbers. How they were constructed and arranged to haul cord wood, and how they were arranged or built to haul carriages and horses.

Thirteenth int'y. Will you state as near as you can recollect the month and year, when the string pieces were first hauled on the two trucks with bolsters and centre pivots in building the road?

Fourteenth int'y. Were the string pieces thus hauled used in laying the track of the road? And what was their size and average length?

Fifteenth int'y. Will you describe the manner in which the bolsters were fixed or arranged, and the manner in which the long string pieces hauled by them, were placed or hauled?

Sixteenth int'y. How did the two four wheel trucks act, or in what manner did they act under this burthen in going through switches and around curves?

Seventeenth int'y. Whether or not did the arrangement of the bolsters allow the trucks to swivel to suit the curves and switches and pass through them?

Eighteenth. Were persons in the habit of getting, or did persons get on the body of long timbers or string pieces, as they rested on the bolsters and in this way ride, or be carried along on the car?

Nineteenth. Whether or not while these two four wheel tracks were thus in operation on the road did the car develope or act upon the same combination or principle as the eight-wheel platform freight and passenger cars now in general use on the railroads, or did it differ in operative principle?

Twentieth. Who originated or invented, planned, and gave the instructions for the construction of the timber car, in the manner you have described?

Twenty-first. In what month and year as near as you remember, was the first of such eight wheel cars constructed with frame work and used to haul cord wood?

Twenty-second. How many of such wood cars, that is, with the

two platforms connected by a framing, were, as near as you can remember, in use in the winters of 1830, and 31, or either?

Twenty-third. Will you now describe this wood car in use in the winter of 1830, stating particularly the mode in which it was constructed, and the mode in which the cord wood was placed and carried upon it?

Twenty-fourth. Will you now produce and file with the commissioner a model of this eight-wheel wood car used in 1830, as you may have stated? (and have it marked exhibit E.)?

Twenty-fifth. How early in the winter of 1830 was the first one of the cars represented by the model constructed?

Twenty-sixth. Whether or not the carriage and horse cars had eight wheels, and how they were constructed and arranged and if they differed from the model of the wood car produced by you, in what particulars did they differ? and if you can produce and file with the commissioner a model of the same?

Twenty-seventh. State if you know whether or not the carriage and horses of John Quincy Adams were drawn in one of these eight wheel cars, and if so, about what time as near as you can.

28th. At what time was the Baltimore and Ohio Railroad furnished or opened by Ellicott Mills as near as you remember?

29th. For what purpose different from carrying wood or carriages and horses, was an eight wheel car next built at the shops, what was her name, and state when the construction of her was commenced?

30th. Can you recollect about how many of the eight wheel timber cars were used for hauling string pieces for the construction of the road in the spring and summer of 1830?

31st. At what time was the first eight wheeled wood car, such as is represented by the model produced first used on the road in the business of carrying cord wood?

32. What was the gauge of the track of the Baltimore and Ohio Railroad in 1830, 1831, 1832, 1833, and 1834.

33. Before you were permanently engaged with the company in building cars and the duties you have mentioned, were you employed on the road in any way? If so, when and in what duty?

34. Who employed you permanently or made the agreement to so employ you on behalf of the company?

35th. Was there a blacksmith's shop at Mount Clare station, and who worked in it?

36. When, if ever, did Leonard Forrest go to work at the shop?

37. Who designed or invented and had constructed the eight wheel wood cars represented by the model produced by you?

38. Who designed and invented and built the eight wheel carriage and horse car?

39. Is the use of such eight wheel cars as the wood cars and the trussel cars for carriages and horses or similar cars continued since

that time on the Baltimore and Ohio and other railroads about Baltimore?

40. Will you describe the eight wheel car for passengers called the Columbus, as she was first constructed, and say when she was thus completed and put upon the road?

41. In what way was the Columbus drawn?

42. Under whose instructions and directions was the Columbus built, and who made or furnished the plans or drawings, and how or upon what were they made?

43. Had the yellow drawing of a body any running gear upon it at the time it was handed to you?

44. Had that yellow drawing of the body frame any railing upon top of it at that time?

45. Who worked from the drawings of the running gear that you made upon the board?

46. To whom did you give possession of the yellow drawing of the body, and who worked from it, if any one?

47. Whether or not was the work of building of the body done under your directions, and to what extent, if any, was the yellow drawing used in constructing the body?

48. Who or what persons worked upon or did the wood work of the body of the car Columbus?

49. Who did the iron work for the eight wheel wood cars; for the eight wheel trussel or carriage and horse cars, and for the eight wheel car Columbus?

50. Who painted the car Columbus?

51. What position or office did Mr. George Brown hold, and during what years, as near as you remember or know in the service of the Company?

52. Who filled the same position next after George Brown? And is the person whom you may name living?

53. Who was the Chief Engineer of the road in 1830 and 1831, and for several years afterwards?

54. When the car Columbus was first put on the road whether or not she had a rod around the top? If so, describe the height and the manner in which it was secured, and the purpose for which it was put there?

55. Was there any net work between the rod and the top of the coach or car at the time when she was first put upon the road?

56. Whether or not were there steps outside at this time? If so, what were the steps outside put there for, and at what part of the outside of the car were they?

57. Whether or not was a railing or wire work put upon top of the Columbus after she was first put upon the road? If so, state about how long after, and describe the kind of railing or work, and the purpose for which it was put there?

58. State the time this work was put there, as near as you can recollect, and if you know who did the work?

59. If you state that it was in the spring following her first being put on the road? State why your belief or knowledge is that it was done at the time you mention?

60. When the car Columbus was first put upon the road was there a rod of iron extending from one truck to the other? If so, state how it was secured; what it was put there for; at whose suggestion, if you know; whether it was removed? If so, when, as near as you can remember; and state the reason why it was removed?

61. Had you approved of that connection of the trucks in the eight-wheel cars in use on the road, or had you said that it was useless?

62. Was that rod removed from the car Columbus before or after the railing of net work, or the net work was fixed around the top of the car?

63. As a general thing had the eight-wheel wood cars, in use on the road before the Columbus was built, represented by the model produced, a rod also extending from one truck or perch pin to the other, under the body framing, or were they used without such rod?

64. Was the hole in the board relatively to the size of the perch pin sufficiently large to allow the trucks to swivel to suit the switches and curves, or how was it fixed?

65. Supposing the centre point of an eight-wheel car to break, was there any intention in such case, in ordering or having the rod or board there; and what was the intention or object?

66. Do you know the use of check chains or connections from the trucks, beside the connection with the centre pivot, in eight-wheel cars, at the present day, to control the truck and prevent it from turning around sideways, or getting away from under the body, in case the truck runs off the track or the pin breaks, or have you no intimate acquaintance with their mode of construction in this respect?

67. Do you know where Ross Winans was, or in what he was engaged, at the time you first constructed and first used the eight-wheel wood car on the Baltimore and Ohio Railroad, like the model presented?

68. What other improvements, if any, beside the application of the swivel principle to the two four wheel trucks under one body, did you invent and apply to the cars on the Baltimore and Ohio Railroad?

69. When the car Columbus was first put upon the road, what kind of seats had she in her? and describe whether she had to be turned round to make her return trip, and how, and why it was done?

70. Did you apply your invention of the shifting backs to the Columbus, or to what car did you first apply them, and when, as near as you can remember?

71. When the shifting backs to the seats first suggested itself to

your mind, did you mention, or describe it to any one? and if so, to whom?

72. How long a time within your recollection was the Columbus used on the road for carrying passengers?

73. What was the shape of the top of the car Columbus, and for what reason was it made of such shape? and were the tops of four wheel passenger cars also made of a somewhat similar shape, and had they also a rod along the sides, a few inches above the top to keep baggage from falling off?

74. In 1830 and 1831 was there any general order as to the weight that should be allowed to be carried on the road as a load for every four wheels sustaining it? if so, what was it?

75. Was this order tested for the eight wheel wood cars used in the winter of 1830, as to the green cord wood?

76. Were there any of the four wheel cars called trucks provided with Winans' friction wheels? and if you can attach a drawing of the four wheel flour car used on said road having the said friction wheels on?

77. State what kind of cars Winans' friction wheels were applied to, and whether they required the wheels of the car to be further apart than the plain boxes did, and why they required the greater distance, and whether the use of them was continued, and if discontinued, why, or how did they wear and act?

78. Why would they wear through very soon when they stood still, and the car was running?

79. When you took the four wheel trucks to make the eight wheel wood cars, did you select those which had the wheels nearest together, or those which had them furthest apart, or were they all about the same distance apart, and about what was the distance of those used for the eight wheel wood cars, as near as you can recollect?

80. Were any of the Winans' friction wheels used on the eight wheel wood cars?

81. When the Winans' friction wheel cars were passing around curves, were the two axles of the wheels thrown out of parallelism with each other?

82. Were cars having Winans' friction wheels commonly called Winans' cars?

83. Whether, or not, were the framings or bodies of the eight wheel wood cars used in 1830, constructed for permanent use?

84. Whether, or not, did you build more of such eight wheel wood cars in 1831?

85. Was the winter of 1831–32 a severe one, or very cold, and was considerable wood required for Baltimore, and to what extent did the railroad attempt to supply wood, and what kind of cars were used beside the eight wheel cars?

86. Describe the manner in which the box cars had the wood

loaded in them, and also describe the manner in which the trucks were used?

87. Did some of the eight wheel cars used in the winters of 1831 and 32, or either, carry more than one rank of wood, if so, say how they were arranged to carry more than one?

88. What other eight wheel passenger cars were built while you remained on the road after the Columbus?

89. Were they built upon the same principle as the eight wheel wood cars and the Columbus?

90. Will you look at the drawing marked, Defendants' Exhibit G, and say if you know what it represents?

91. When and where did you first see such a drawing, or a similar drawing, and what became of it so far as you know?

92. Where did you get the drawing in the latter part of February 1831, and where was it put for keeping?

93. Is that the same drawing of which you spoke as having been placed in Oliver Cromwell's chest, that you may have referred to in your last answer as having placed in his chest.

94. Will you measure the drawing marked Defendants' Exhibit G, and state the scale of its length and height relatively to the length and height at which the body of the car Columbus was built?

95. Will you measure the Model E, and state the length of the scale of the body framing, the distance at which the trucks are coupled apart, and the dimensions of the trucks in relation to the wood car used in the latter part of 1830?

96. Will you measure the distance between the long body timbers that are bolted on to the bolsters to sustain the wood, and state the scale of those two timbers apart from each other in relation to the wood car used in the latter part of 1830.

97. Whether or not you recollect that Jacob Rupp told you that he had suggested a mode of drawing cars, that he was about to build for the Baltimore and Ohio Railroad, and if yea, state when you remember that he first told you, as near as you can, to whom he had made the suggestion or communicated the plan, and what he told you his suggestion was?

98. Whether or not Jacob Rupp constructed the plan of drawing the cars that he described to you?

99. Will you state as near as you can recollect the distance apart of the wheels in each truck of the Columbus between the flanges and the diameter of the wheels, and whether or not when she was first put on the road, she had the Winan friction wheels on for the journals to run in, and whether the friction wheels were taken off and plain boxes put on?

100. Will you state the diameter of the wheels of the eight wheel wood car, used in the latter part of 1830, as near as you can recollect?

101. Did you know a person by the name of William E. Rutter in 1830 and 1831, if so, when and with whom was he employed?

102. Whether or not the trucks of the eight wheel wood cars had brakes on them?

103. Whether or not you can say what Ross Winans was employed in doing in the year 1831?

104. Whether or not he was employed on machinery for an inclined plane?

105. Why did you not apply for letters patent for the application of the swivelling principle to the two four-wheel trucks under one car body burthen or load, and also for the changeable seats, to allow the car to run either end foremost, without turning the body, and also for the cast iron pockets to receive the plain ended springs working in them? What were your motives or objects in producing these improvements on the Baltimore and Ohio Railroad?

106. Whether or not at the time you considered any one or all of these improvements as originated and constructed or built by you and under your directions?

107. Had Ross Winans in 1830 or 1831 any authority to direct or give orders to you about any improvements or work? And did he give any—if any, what instructions or orders?

108. Will you state what the king bolts of the first timber cars for hauling string pieces, that is, the eight-wheel timber cars, were made of, or what were used for king bolts for those first timber cars, or the first one of them?

109. Did you obtain the perch pins and plates which you used for the king bolts on the bolsters from the perches of four-wheel cars that were out of repair, or then about the shop, and if not, from what were they obtained?

110. Will you produce and file with the Commissioner, and have it marked "Defendant's Exhibit I.," a ground plan of the elevation of the running gears of the Columbus: an end elevation of the bolster and its connections; and of the railing that was first put on the Columbus on top, and describe the same in your answer?

111. If you have not already, will you take the different figures of the drawing, one by one, beginning with figure first, and describe the different parts by reference to the letters on them?

112. If you have not already, will you state what the small letters S. S. in figure 1 indicate?

113. Will you state the time at which the Columbus first went on the road with her running gear and the finish to the top of the body, the same as shown by the drawings to which you have just referred, marked Defendant's Exhibit I?

114. What kind of boxes are those which she then had on, and which are shown by the drawing figure 1, letters S S?

115. Who made the bolts to fasten those plain chilled boxes on the running gear of the Columbus that were there in July 1831, when she first went on the road?

116. Who made the baggage rods and uprights that were on the Columbus in July, 1831, when she first went on the road, and the

same as shown by fig. 4 of the Defendant's Exhibit I, which you have just referred to, and who painted the same, if it was painted?

117. Were the plain boxes letters S S that were on the Columbus in July, 1831, and the baggage rods removed, or had they anything put in their place, if so, what was put in or used instead of them, and when was the change made, as near as you recollect?

118. If Winans' friction wheels were put in place of them, say whether or not they answered the purpose intended?

119. Were the friction wheels, that were put in when the Columbus was altered or fixed with them, removed, and if so, what kind of boxes were again put on her?

120. Was the new chill box considered what is called a plain box?

121. Had the friction wheels boxes inclosing them when first used on the road? State also how they were applied, how the side pieces of the truck were constructed for them, and whose friction wheels they were, or by what name known.

122. Whether or not Winans' friction wheels had boxes enclosing them at any time, if so state on what kind of cars, whether four wheel or eight wheel, they were first used, and when they were first used; and state also how they were applied, how the side pieces of the truck were constructed for them.

123. On how many eight wheel cars were the boxes used to enclose the friction wheels?

124. Were the single side pieces that were in the trucks of the Columbus when she first ran on the road, in July, 1831, and shown in figures 1 and 2 of the Exhibit I, removed, and double side pieces applied, in the manner you have described, when the boxes inclosing the under side of the friction wheels were applied to her?

125. When the friction wheels were so applied with boxes inclosing them, did the upper portion of the friction wheel project above the side piece, or in what manner was the journal of the wheel axle brought in contact with the inner face of the friction wheels?

126. Were boxes inclosing the under side of the friction wheel in use on any cars on the road when the Columbus was running in July, 1831, or were such boxes and such inclosures of the friction wheels introduced after the Columbus was built first, and running at said time, July, 1831?

127. On what cars were the friction wheel boxes placed, or used, at the time the Columbus was finished, July 3d, 1831?

128. Was Jonathan Knight a civil engineer only, or a mechanical engineer, or machinist by occupation?

129. What was John Elgars' employment before he went into the service of the Company, or, when he worked for George Gillingham, at what did he work?

130. Where did Ross Winans come from, or was he reported to come from, and what was his employment or business before he appeared with his friction wheel car?

131. What was George Gillingham's employment, and did he do work for you before he became superintendent of machinery?

132. What became of Phineas Davis, and in what business are George Brown and William Woodville engaged at the present time?

133. Have you continued to pursue your profession of a millwright and machinist since you left the service of the Company, in April or May, 1834, and are you now builing a mill or mills, or in what way engaged in said business?

134. Is Ross Winans reputed to have gone to drawing school to learn to draw, or make drawings since the year 1830 or 1831?

135. Were you or not the only regular master machinist or master carpenter, by profession or occupation, that had charge of the construction of cars from the early part of 1830 to April or May, 1834, when you left the employ of the company to pursue your profession as a millwright and machinist?

136. When the railroad was constructed or extended from Baltimore to Ellicott's Mills, did it pass through or near forests or woods, and was cord-wood made available by it for the Baltimore market.

137. About what number of four-wheel trucks, such as were used for constructing the eight-wheel wood cars like model E, were there in use upon the road in the fall months in the year 1830, and were they numbered or not at the time?

138. Was the weighting of the green cord wood which you may have spoken of in your examination, done some time after some of the eight-wheel wood cars had been in operation?

139. Was the body framing of the eight-wheel wood cars made of scantling or string pieces as you have described, planed or painted; and where was it put together and fitted on the four-wheel trucks; where did the trucks stand at the time?

140. Did you include such work as bolting together, or putting together, or putting together the wood cars in your monthly pay rolls, and if not, why not?

141. Can you produce and file the originals, and if not, file copies of your pay rolls from Nov., 1830, to March, 1831, inclusive, and the originals, or if not, file copies of extracts from the official reports of the company taken by you heretofore; if so, please produce and file the same?

142. Can you produce and file a drawing representing a side view of the car Columbus, as she was when first put on the road, in the early part of July, 1831?

144. Will you state what kind of work the entries on the pay rolls for November and December, 1830, and January, February, and March, 1831, refer to, or where it was done; and state why the fitting of the body framing of the eight-wheel wood cars together and on the trucks, was not stated or mentioned on said pay rolls?

145. Whether or not the pay roll of December, 1830, contains an entry of the trussels made for the eight-wheel carriage and horse cars; if so, read the entry, and state what it is?

146. Whether or not the car Columbus and the eight-wheel wood and carriage and horse cars, and about how many were in use upon the road from the time of the first building of them until you left in April or May, 1834, and state how long, to your knowledge, they were used on the road as occasion required?

147. Will you produce a drawing similar to a certain smoked drawing which you have seen in the possession of Mr. Gould, the agent or attorney of Mr. Winans, and said by him to be the one from which the body of the Columbus was built, and mark it "Exhibit No. 4," and say whether or not the said smoked drawing represented the Columbus as she was first built in any other precise particular than in the colors which the body and doors are painted, and in the general feature of a car with four wheels on a side? Examine it closely and particularly.

148. Will you now produce and have marked "Exhibit K" drawing, or a model of the car Columbus, representing her as she was when first built and put in operation on the road in July, 1831?

149. Will you take the Exhibit No. 4 and carefully examine the ground plan of the bottom framing on it, and say whether or not it has the same number of pieces arranged in the same way that the bottom framing of the Columbus had when first built? and if not, state the difference?

150. Whether or not this ground plan in Exhibit No. 4 has any piece or pieces running lengthwise between the side pieces to support the floor, and does this plan at one end show that the floor boards are extending crosswise, and not lengthwise?

151. Will you look at the said ground plan on "Exhibit No. 4," and say what the two cross pieces on it, with two concentric segments of circles to each set of cross pieces represent in mechanics?

152. Supposing a man was underneath and looking up at it, or the said ground plan of "Exhibit No. 4," what does the ring shown there indicate in its position as shown by each set of the cross pieces? and look also at the side elevation view, and say if it shows plain bolsters; and then measure the shortest of the cross pieces in the ground plan; and say what it would be in length, at a scale of three-quarters of an inch to the foot; and whether it would be long enough to go either across the body of the car, or across the truck frame shown in side view on the elevation?

153. What do the two segments of the ring each side of the short cross piece on the ground plan show, or indicate, as to the position of the ring, relatively to the short and the long cross pieces, and as to their motion or action relatively to each other?

154. Is there any track shown on the ground plan part of the exhibit?

155. Whether or not is there any thorough brace, bolster, and ring connected with it shown on the elevation part of the exhibit where the trucks are shown as connected with the body, or are they shown as plain bolsters?

131. What was George Gillingham's employment, and did he do work for you before he became superintendent of machinery?

132. What became of Phineas Davis, and in what business are George Brown and William Woodville engaged at the present time?

133. Have you continued to pursue your profession of a millwright and machinist since you left the service of the Company, in April or May, 1834, and are you now builing a mill or mills, or in what way engaged in said business?

134. Is Ross Winans reputed to have gone to drawing school to learn to draw, or make drawings since the year 1830 or 1831?

135. Were you or not the only regular master machinist or master carpenter, by profession or occupation, that had charge of the construction of cars from the early part of 1830 to April or May, 1834, when you left the employ of the company to pursue your profession as a millwright and machinist?

136. When the railroad was constructed or extended from Baltimore to Ellicott's Mills, did it pass through or near forests or woods, and was cord-wood made available by it for the Baltimore market.

137. About what number of four-wheel trucks, such as were used for constructing the eight-wheel wood cars like model E, were there in use upon the road in the fall months in the year 1830, and were they numbered or not at the time?

138. Was the weighting of the green cord wood which you may have spoken of in your examination, done some time after some of the eight-wheel wood cars had been in operation?

139. Was the body framing of the eight-wheel wood cars made of scantling or string pieces as you have described, planed or painted; and where was it put together and fitted on the four-wheel trucks; where did the trucks stand at the time?

140. Did you include such work as bolting together, or putting together, or putting together the wood cars in your monthly pay rolls, and if not, why not?

141. Can you produce and file the originals, and if not, file copies of your pay rolls from Nov., 1830, to March, 1831, inclusive, and the originals, or if not, file copies of extracts from the official reports of the company taken by you heretofore; if so, please produce and file the same?

142. Can you produce and file a drawing representing a side view of the car Columbus, as she was when first put on the road, in the early part of July, 1831?

144. Will you state what kind of work the entries on the pay rolls for November and December, 1830, and January, February, and March, 1831, refer to, or where it was done; and state why the fitting of the body framing of the eight-wheel wood cars together and on the trucks, was not stated or mentioned on said pay rolls?

145. Whether or not the pay roll of December, 1830, contains an entry of the trussels made for the eight-wheel carriage and horse cars; if so, read the entry, and state what it is?

146. Whether or not the car Columbus and the eight-wheel wood and carriage and horse cars, and about how many were in use upon the road from the time of the first building of them until you left in April or May, 1834, and state how long, to your knowledge, they were used on the road as occasion required?

147. Will you produce a drawing similar to a certain smoked drawing which you have seen in the possession of Mr. Gould, the agent or attorney of Mr. Winans, and said by him to be the one from which the body of the Columbus was built, and mark it "Exhibit No. 4," and say whether or not the said smoked drawing represented the Columbus as she was first built in any other precise particular than in the colors which the body and doors are painted, and in the general feature of a car with four wheels on a side? Examine it closely and particularly.

148. Will you now produce and have marked "Exhibit K" drawing, or a model of the car Columbus, representing her as she was when first built and put in operation on the road in July, 1831?

149. Will you take the Exhibit No. 4 and carefully examine the ground plan of the bottom framing on it, and say whether or not it has the same number of pieces arranged in the same way that the bottom framing of the Columbus had when first built? and if not, state the difference?

150. Whether or not this ground plan in Exhibit No. 4 has any piece or pieces running lengthwise between the side pieces to support the floor, and does this plan at one end show that the floor boards are extending crosswise, and not lengthwise?

151. Will you look at the said ground plan on "Exhibit No. 4," and say what the two cross pieces on it, with two concentric segments of circles to each set of cross pieces represent in mechanics?

152. Supposing a man was underneath and looking up at it, or the said ground plan of "Exhibit No. 4," what does the ring shown there indicate in its position as shown by each set of the cross pieces? and look also at the side elevation view, and say if it shows plain bolsters; and then measure the shortest of the cross pieces in the ground plan; and say what it would be in length, at a scale of three-quarters of an inch to the foot; and whether it would be long enough to go either across the body of the car, or across the truck frame shown in side view on the elevation?

153. What do the two segments of the ring each side of the short cross piece on the ground plan show, or indicate, as to the position of the ring, relatively to the short and the long cross pieces, and as to their motion or action relatively to each other?

154. Is there any track shown on the ground plan part of the exhibit?

155. Whether or not is there any thorough brace, bolster, and ring connected with it shown on the elevation part of the exhibit where the trucks are shown as connected with the body, or are they shown as plain bolsters?

156. Do the rings in Exhibit No. 4, showing only segments in the ground plan, and not showing the entire ring across the short cross pieces, together with the connection in the elevation of the Exhibit No. 4 between the trucks and body being with plain bolsters indicate or show that those short cross pieces on the ground plan are not thorough brace bolsters?

157. If those short pieces on the ground plan in "Exhibit No. 4" were intended to be thorough brace bolsters connected to the cross pieces, or bolsters of the body framing shown in the ground plan—would those rings have had to be shown in the full circle extending across the short bolster as in an underneath view of the car, or would they be in segments passing between the two as shown in the ground plan "Exhibit 4?"

158. Whether or not did the bottom side pieces of the car Columbus, as she was built, extend only flush or even with the box part of the body as in "Exhibit No. 4," or did they extend beyond the box part of the body as shown in "defendant's exhibit drawing or model K?"

159. Will you measure the dimensions of the sliding windows in the Exhibit No. 4, at the scale of three-quarters of an inch to the foot? And also state the number of such sliding windows or openings in said "Exhibit No. 4" on a side, and after having answered, state the dimensions and number of the sliding windows or openings in the car Columbus, when she was first built on a side.

160. State the size of the panes of glass in the Exhibit No 4, on a scale of three-quarters of an inch to the foot, and state the number of them on a side? And after having answered, state the size and number of the panes of glass in the car Columbus, on a side, when she was first built, as near as you can recollect?

161. Will you look at the top side piece of the body in the Exhibit No. 4, and state its breadth at the scale of three-quarters of an inch to the foot? And also the breadth of the side piece in the same Exhibit under the window sash, and state if they differ from the car Columbus, and how the body of the said car was built in this respect?

162. Why was the top side piece of the body in the Columbus made large and strong as it was; and does this Exhibit No. 4 show the top side piece of the body as supporting the roof? Or is it shown without any roof resting on top of it?

163. Whether or not has the "Exhibit No. 4" any iron baggage rods, or iron uprights upon top of the body, such as were on the Columbus when first built? Or has this "Exhibit No. 4" a differently constructed, and different kind of a fixture or railing on top?

164. Will you now look at the trucks on the said Exhibit No. 4, and state first if the perch on the Exhibit is shown as tapered and without hounds; and state how the Exhibit shows the perch, as connected to the bolster and cross pieces? And then state how the

perch of the Columbus was constructed, shaped and connected to the bolster and cross pieces when first built?

165. Whether or not the side pieces of the truck frames of the car Columbus, when first built, were single timbers, with plain boxes for the journals to run in, and what kind of side pieces were those required to apply the friction wheel boxes shown in "Exhibit No. 4."

166. Inty. Do you know any other matter or thing touching the matters in question, that may tend to the benefit or advantage of the defendants, if yea, declare the same fully and at length, as if particularly interrogated thereto?

EATON & DAVIS,
Def'ts' Attorneys.

Additional interrogatories to John M. Eichelberger, Conduce Gatch, Jacob Rupp, and Leonard Forrest, on behalf of defendants.

1. Will you state as near as you can at what time the Columbus, the Winchester, the Dromedary, and the Comet, were each of them first put upon the road, and annex or identify a drawing of each, if you can? and describe their construction and mode of operation?

2. Will you state whether or not the said cars, Columbus, Winchester, Dromedary, or Comet, or either of them were used by the Baltimore and Ohio Railroad Company in carrying passengers for fare or pay, if so, when first and during what period of time?

3. Do you know any other matter or thing touching the matters in question which may tend to the benefit or advantage of the defendant? If yea, declare the same fully and at length as if particularly interrogated thereto.

EATON & DAVIES,
Def'ts' Attorneys.

CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

ROSS WINANS
against
THE NEW YORK AND ERIE RAILROAD COMPANY.

Cross-interrogatories to be administered to Conduce Gatch, of or near the City of Baltimore, a witness to be produced, sworn (or affirmed), and examined under and by virtue of the annexed commission before John Hanan, United States Commissioner residing at (or near) Baltimore, in the State of Maryland, the Commissioner therein named, in a certain cause now pending and at issue in the Circuit Court of the United States for the Northern District of New York, wherein Ross Winans is plaintiff, and the New York and Erie Railroad Company is defendant, on the part and behalf of the defendant, said cross-interrogatories being in reply to the interrogatories to said Gatch on the part of the defendant.

First Cross-interrogatory. Who was the chief engineer of the said

Baltimore and Ohio Railroad Company, whilst you were connected with it, and who were his assistants as engineers of machinery?

Second Cross-interrogatory. Was there any engineer or superintendent of machinery or master machinist employed by said company whilst you were connected with said road? And, if yea, during what period, and who were they? Was not Ross Winans in the employ of said company in some one of the above named capacities, or as assistant to Jonathan Knight, while you were connected with said road? and, if yea, when was he first in such employ, and how long did he continue therein?

Third Cross-interrogatory. Did you see Ross Winans about the road and shops of said company attending to his duties in the service of said company in the year 1830, or in the year 1831, or in the year 1832? and, if yea, how early in either of said years? Specify what his duties were in those years?

Fourth Cross-interrogatory. Did the said Ross Winans give you any instructions or directions directly or indirectly, relative to work to be done in the shops of the Baltimore and Ohio Railroad Company in the year 1830, or in the year 1831? if yea, of what nature were they? state fully.

Fifth cross-interrogatory. Did you ever consult or take the opinion of Ross Winans relative to the work being done in any of said shops?

Sixth cross-interrogatory. Did not Ross Winans furnish you with drawings for work to be done by yourself and others, intended for use on said road?

Seventh cross-interrogatory. What were the duties of John Elgar in the service of said Company, and did you receive any instructions or drawings from him for work to be done in said shops? And if yea, what were such instructions?

Eighth cross-interrogatory. Do you know of any experiments made on said road, by persons in the employ of said Company, with cars of the kinds then in use, to determine the amount of friction on curves, and the operation of such cars in other respects? If yea, state under whose directions such experiments were made, and whether Ross Winans was not engaged or did not take part in making such experiments, or some of them?

Ninth cross-interrogatory. Had you any other duties than to superintend the work going on in such shops of said Company as may have been under your charge, and to obtain the materials which were required to be made up in said shops? If yea, state what such other duties were.

Tenth cross-interrogatory. Were the forms and proportions of the four-wheeled burden cars used on said road fixed and determined when you entered the service of said Company? And if yea, when first to your knowledge, and what were such proportions as so fixed?

Eleventh cross-interrogatory. What was the length of the plat-

forms of the four-wheeled freight and burden cars, as they were adopted for use on said road?

Twelfth cross-interrogatory. What was the size of the wheels used in four-wheeled freight and burden cars on said road, and what distance apart were the axles placed in such cars in the year 1830 and in the year 1831? And was not the distance between the axles in such cars varied for different lengths of the car-body, and for the different articles to be transported in such cars? And, if yea, why?

Thirteenth cross-interrogatory. At what distance from the ends of the platform of a four-wheeled car ought the wheels or axles to be placed to carry the load with the least disturbance?

Fourteenth cross-interrogatory. Was it or not considered desirable to obtain as long a platform or body as possible for four-wheeled cars on said road, having reference to the use to be made of such body or platform?

Fifteenth cross-interrogatory. What was the length of the platform or body of four-wheeled passenger cars on the Baltimore and Ohio Railroad in the year 1830, and in the year 1831, and how far were the axles from the ends of the platform of such cars?

Sixteenth cross-interrogatory. When were four-wheeled passenger cars used on said road, and during what period? And what distance were the axles of such four-wheeled passenger cars apart, while so used?

Seventeenth cross-interrogatory. What number, if any, of such four-wheeled passenger cars were constructed without Winans' friction wheels and boxes?

Eighteenth cross-interrogatory. What distance apart were the axles in such, if any, of said four-wheeled passenger cars as had plain boxes?

Nineteenth Cross-interrogatory. How many passengers, with their baggage, were considered a load for the inside of a four-wheeled passenger car, on said road, in 1830, and 1831, and 1832? Answer this question by stating the number of passengers, without reference to the weight of the load.

Twentieth Cross-interrogatory. What proportion of the bodies of the four-wheeled passenger cars, on said road, in 1830, and 1831, and 1832, extended beyond the axles at each end of the car?

Twenty-first Cross-interrogatory. Were four-wheeled passenger cars built and finished, in the year 1830, in the shops of said road then under your charge?

Twenty-second Cross-interrogatory. Who directed the proportions and sizes of such cars, if any were so built?

Twenty-third Cross-interrogatory. When were trucks or bearing carriages first constructed in the shops of the said company, which were intended to be used only as part of eight-wheeled freight cars?

Twenty-fourth Cross-interrogatory. If you shall have stated that you invented the swivelling double truck eight-wheeled car that was put upon said road, state what first led you to make such invention.

What the necessity was for making such invention; to whom you first communicated your ideas respecting such invention, and from what person you obtained permission to use the materials and operatives of the said railroad company, in the construction of any experimental car embodying such invention. And, if any such experimental car was constructed, state whether any plan was previously drawn, and by whom, and when, and to what officer or officers of said company said plan was submitted, and by whom, and when. State who was the superintendent of machinery on said railroad at the time you made such invention, and at the time such plan, if any, was drawn, and whether such plan was submitted to such superintendent, and when, and by whom.

Twenty-fifth Cross-interrogatory. State whether Oliver Cromwell, Michael M. Glenn, Henry R. Reynolds, and Isaiah Terry, did not work upon the construction and repair of cars at the Mount Clare shops of the Baltimore and Ohio Railroad Company in 1830, 1831, or 1832, and state the time when each commenced work there, and how long he continued, and in what branch of business each of them worked.

Twenty-sixth Cross-interrogatory. When you left the employ of said company, did not Michael M. Glenn succeed you in the duties that you had previously performed?

Twenty-seventh Cross-interrogatory. If, in answer to any direct interrogatory, you shall have stated that swivelling double truck eight-wheeled cars were constructed prior to March, 1831, and used on the Baltimore and Ohio Railroad for the transportation of long timbers, and for hauling cord wood, and for hauling carriages and horses, specify particularly how many such cars were used for each of such specific purposes, when they were first used, and how long they were continued in use, by whom they were planned and constructed, and whether the plan on which they were constructed was first submitted to any officer or officers of the said company, and if so, who was or were such officer or officers. And if you shall have *have* stated that such cars, or any of them, were planned or constructed by yourself, state whether you received any authority to do so from any officer or officers of said company, and who was or were such officer or officers.

Twenty-eighth Cross-interrogatory. If you shall have testified, that any such eight-wheeled cars were constructed prior to March, 1831, state whether the four-wheeled trucks or bearing carriages or wagons of such eight-wheeled cars, or any of such trucks or bearing carriages or wagons, and if so, how many were constructed specially for the sole purpose of making part of such eight-wheeled cars, or whether such four-wheeled trucks or bearing carriages or wagons, were constructed specially to be used as four-wheeled cars, and to be incidentally or temporarily connected together to form an eight-wheeled car. And, in either case, describe specifically the construction or proportions of all such four-wheeled trucks or bearing carriages or

wagons, as to the length and breadth of the platform or framing, and as to the size of the wheels, and as to the distance between the centres of the axles, or, as to the distance between the treads of the wheels, and as to whether they had or had not springs, and as to whether they had or had not bolsters. And state in what manner such trucks or bearing carriages or wagons or any of them, were connected together to form eight-wheeled cars. Describe particularly the form and construction of all the bodies if any there were, resting on any two of such four-wheeled trucks or bearing carriages or wagons, and the manner in which all such bodies were connected with such trucks or bearing carriages or wagons, and specify particularly the manner in which such eight-wheeled cars were drawn, whether by the end of the framing of one of the trucks or bearing carriages or wagons, or by a perch from one of the trucks or bearing carriages or wagons, or by the body, if any, which rested on two of such trucks or bearing carriages or wagons.

Twenty-ninth Cross-interrogatory. State whether, prior to March, 1831, all the four-wheeled carriages, trucks or wagons, used on said railroad, whether used singly or two in connection, to form what you may have termed an eight-wheeled car, were not made with a closed horizontal platform on the top of the wheel frame, and whether such platform would have been, and, if so, in what manner, necessary, in carriages or trucks or wagons constructed specially, for the sole purpose of making part of eight-wheeled cars.

Thirtieth Cross-interrogatory. Prior to March, 1831, was not the only mode practised on the said railroad, of using in connection two four-wheeled trucks, carriages or wagons, that of coupling them by means of a reach, or of a piece of timber, or of a piece of board, extending from the draw-pin on the inner end of one of such trucks, carriages or wagons to the draw-pin on the inner end of the other of such trucks, carriages or wagons, and there laying on the platforms of such two trucks or carriages or wagons, or on temporary bolsters placed on such platforms, timbers which required to be transported along the line of said railroad, and yet were too long to be transported on a single four-wheeled truck, or carriage or wagon?

Thirty-first Cross-interrogatory. If you shall have testified that prior to March, 1831, cord-wood was transported on the said railroad on a frame work placed on two four-wheel trucks or carriages or wagons, specify how many of such structures on which cord-wood was transported were constructed or used prior to March, 1831, by whose order or orders such structures, or any them, were constructed, and when each of such structures was first used, and how long each of such structures was continued in use? Who had charge of the transportation department of said road at the time each of such structures was first used, and who had charge of the running or use of such structures, or of any of them, after they, or any of them, were put in use on said railroad.

Thirty-second cross-interrogatory. If you shall have testified that

any eight wheeled double truck car, or cars, was, or were constructed prior to March, 1831, for the said Railroad Company, state whether the body or frame work resting horizontally on the trucks, or bearing carriages or wagons of such cars was an open frame work, or a closed platform, and if the latter, whether such closed platform extended beyond the ends of such trucks, or bearing carriages or wagons?

Thirty-third cross-interrogatory. If you shall have testified that any double truck eight wheeled car, or cars, was, or were used on said railroad prior to March, 1831, for the transportation of horses and carriages, state the first occasion on which any such car was used for such purpose, and the date of such first use of such car, and what led to the first use of such car for such purpose, and whether after such occasion such eight wheeled cars continued to be used for the general transportation of horses or carriages on said road?

Thirty-fourth cross-interrogatory. Was the said railroad opened for general transportation beyond Ellicott's Mills prior to 1831; and what is the length of the said road from Baltimore to Ellicott's Mills?

Thirty-fifth cross-interrogatory. Was the said railroad, prior to the time when it was opened for general transportation beyond Ellicott's Mills, habitually used for the transportation of passengers, or stock, or merchandise destined for places beyond Ellicott's Mills?

Thirty-sixth cross-interrogatory. If you shall have testified, that the wheels of four wheeled cars on the said railroad were prior to March, 1831, frequently placed so near to each other, that their treads or flanches were within two or three inches of each other, state for what reason such wheels were placed so near to each other, and whether prior to March, 1831, you were aware of the mechanical fact, that when the wheels of a railroad truck, or carriage, or wagon are placed near to each other, they pass through short curves and switches with more facility and less friction than when placed at a greater distance apart?

Thirty-seventh cross-interrogatory. Were not one or more experiments made upon said road, or by the officers of said Company, prior to March, 1831, with a view to determine the best distance at which the wheels of a four wheeled car should be placed to pass around curves with the greatest facility. And was not Ross Winans, at the time or times of the making of said experiment or experiments, in the employ of said Company, and was, or were not such experiment or experiments made under the direction of Ross Winans, and if not, state whether he was not engaged, or did not take part in such experiment or experiments?

Thirty-eighth cross-interrogatory. Was not a curve on Stimpson's plan laid down on said road prior to March, 1831, for the purpose of making experiments with a car or cars running on said curve, to determine the difference in the friction between the flanches of the wheels and the rails where the axles of the wheels were placed at

different distances apart, and were not such experiments made prior to March, 1831, and was not Ross Winans engaged in, or connected with such experiments? And did not such experiments establish the mechanical fact, that the nearer the axles of the wheels are placed to each other, the less will be the amount of friction between the flanches of the wheels and the rails in passing around curves? And if you shall state that such experiments were made, but not prior to March, 1831, state when such experiments were made?

Thirty-ninth cross-interrogatory. State whether your duties while you were in the employment of said railroad company were not confined to superintending the work in the shops which were under your charge. And, if you performed any other duties, state what such other duties were, and when and where they were performed.

Fortieth cross-interrogatory. Did you make or direct or take part in any of the experiments referred to in the thirty-seventh and thirty-eighth cross-interrogatories?

Forty-first cross-interrogatory. If you shall have stated that you had the planning and direction of the construction of cars for the said railroad, and that it was left to your judgment to determine the proportions of such cars, and if you shall have answered the fortieth cross-interrogatory in the negative, state why none of the experiments referred to in the thirty-seventh and thirty-eighth cross-interrogatories were made by you or under your direction, add why you did not take part in any of said experiments.

Forty-second cross-interrogatory. If you shall have testified that the car Columbus was invented and planned by you, state when you first made a drawing or drawings of it or any part of it, on what such drawing or drawings was or were made, what such drawing or drawings represented, what the size or sizes of such drawing or drawings was or were, and whether such drawing or drawings represented the entire car, or the whole of the running gear without the body, or only one of the trucks or bearing carriages.

Forty-third cross-interrogatory. State whether the drawing representing the body of the car Columbus was not given to you either by George Brown, and if yea, state whether such drawing was given to you before or after you made a drawing or drawings, if any, of the running gear or of one of the trucks of the car Columbus. And, if before, state what instructions, if any, were given to you, and by whom, or what conference or consultation you had with any person and with whom, relative to building a car having a body like that represented by such drawing, and if after, state how it happened that without any such instructions or any such conference or consultation you were engaged in planning and drawing the running gear of a car the body of which was being planned and drawn by another, and how you could give the required proportions to the running gear without knowing what were to be the proportions of the body.

Forty-fourth cross-interrogatory. Were not the flanches of the

wheels in each truck of the car Columbus put as far apart from each other as from twelve to fifteen inches?

Forty-fifth cross-interrogatory. If you shall have stated that prior to March, 1831, you knew the importance of placing the wheels of a railroad car near together to pass freely around curves, state whether in making a double truck eight-wheeled car the object was not to place the wheels in each bearing carriage or truck near enough to enable them to pass freely around short curves, and, by the use of two such trucks, to give steadiness of motion to the body. And, if yea, and if the flanches of the wheels in each truck of the car Columbus were put as far apart from each other as from twelve to fifteen inches, why were such flanches put so far apart from each other?

Forty-sixth cross-interrogatory. What kind of journal boxes did the car Columbus have when she was first constructed and put upon the said railroad? Did she then have Winans' friction boxes, or plain boxes?

Forty-seventh cross-interrogatory. If, in answer to the forty-fifth cross-interrogatory, you shall have stated that the flanches of the wheels in each truck of the car Columbus were put as far apart from each other as from twelve to fifteen inches, to allow of the use on such car of Winans' friction boxes, state whether there was any difficulty in building the trucks of said car with such friction boxes, and yet placing the flanches of the wheels in each of said trucks so near as just to clear each other, and if not, why not?

Forty-eighth cross-interrogatory. State whether you did not give a written deposition at Baltimore, in April, May and June, 1853, before Levin Gale, Esq., Commissioner, as a witness for the defendants in a suit in equity pending in the Circuit Court of the United States for the District of Massachusetts, brought by Ross Winans against the Eastern Railroad Company, founded on said Winans' said patent of October 1st, 1834. State whether, as a part of such deposition, the following question was not addressed to you by the counsel for the defendants on the 22d of April, 1853: "Q. No. 99. Will you state as near as you can recollect, the distance apart of the wheels in each truck of the Columbus, between the flanges and the diameter of the wheels? and whether, when she was first put on the road, she had the Winans friction wheels on, for the journals to run in? and whether the friction wheels were taken off and plain boxes put on." Also state whether you did not on the said 22d of April, 1853, answer said question as follows: "A. The distance, I think, was about from twelve to fifteen inches apart in the flanges; the diameter of the tread of the wheel about thirty inches; I believe that was the way she was built, with Winans' friction wheels; but they were found too weak and unsafe for the load that was placed on her generally; a change was then made to plain boxes."

Forty-ninth cross-interrogatory. State whether, as a part of the deposition mentioned in the forty-eighth cross-interrogatory, the following question was not addressed to you by the counsel for the de-

fendants on the 5th of May, 1853. "Q. No. 113. Will you state the time at which the Columbus first went on the road, with her running gear, and the finish to the top of the body, the same as shown by the drawings to which you have just referred, marked Defendants' Exhibit I." Also state whether you did not on the said 5th of May, 1853, answer said question as follows: "A. July 1831." Also state whether, as a part of said deposition, the following question was not addressed to you by the counsel for the defendants, on the 5th of May, 1853: "Q. No. 114. What kind of boxes are those which she then had on, and which are shown by the drawing, figure 1, letters S?" Also state whether you did not, on the said 5th of May, 1853, answer said last named question as follows: "A. What we call plain chill boxes."

Fiftieth cross-interrogatory. State whether you did not, on the 28th of April, 1853, make oath to a written affidavit at Baltimore before John Hanan, Esq., United States Commissioner, in a suit in equity pending in the Circuit Court of the United States for the Northern District of New York, brought by Ross Winans against Orsamus Eaton, Uri Gilbert, and Edward O. Eaton, founded on said Winans' said patent of October 1st, 1834? State whether in said affidavit you did not, in speaking of the said car Columbus, use the following language: "The trucks of the car also had on her at first plain boxes;" and also the following language: "After the Columbus had run for several weeks, alterations were made in her. In place of the plain boxes to the trucks, Winans' friction wheels were applied to her, but these were soon removed and plain boxes were again put on her."

Fifty-first cross-interrogatory. State whether you did not give a written deposition at Baltimore in June, 1848, before John Carrere, Esq., United States Commissioner, as a witness for the defendants in an action at law pending in the Circuit Court of the United States for the Northern District of New York, brought by Ross Winans against the Schenectady and Troy Railroad Company, founded on said Winans' said patent of October 1st, 1834. State whether, as a part of such deposition, the following question was not addressed to you by the said Ross Winans on cross-examination: "Ques. What, in your opinion, is the principle of the 8 wheel car now in general use, and was this principle in the car invented by you as stated in your examination in chief?" Also, state whether you did not answer said question as follows: "Ans. The principle of an 8 wheel car I consider to be in placing a frame work on the 4 wheels and so connected with the body or load as to enable the truck or running gear to move with ease under the load by the body resting on a point at the centre of the truck or running gear, the wheels being brought as near together as possible so as not to touch, and placed at a proper distance from each end of the car or load. This enables both sets of wheels or trucks to move at any angle from a right to a straight line. This principle was in part in the car Co-

lumbus invented by me, with this difference, that the body and frame work were prepared for Mr. Winans' friction wheels, which at that time were too far apart to carry out the principle successfully and properly, I not having control entirely of the distance the wheels were placed apart. This was afterwards altered, and the wheels placed closer together. We certainly altered the boxes on the Columbus and put the wheels closer together."

Fifty-second cross-interrogatory. Had you not, prior to the building of the car Columbus, condemned Winans' friction boxes?

Fifty-third cross-interrogatory. State whether, as a part of such deposition given by you before Levin Gale, Esq., in the said suit of Ross Winans against the Eastern Railroad Company the following question was not addressed to you by the counsel for the defendants: "Q. No. 77. State what kind of cars Winans' friction wheels were applied to, and whether they required the wheels of the car to be further apart than the plain boxes did, and why they required said greater distance, and whether the use of them was continued, and, if discontinued, why; or how did they wear or act?" Also state whether you did not answer said question as follows: "A. They were applied chiefly to the four wheel passenger cars; to some few cars for merchandise. The wheels were used further apart than most of the plain box cars. It was not necessarily so; but they passed easier through the switches and curves, on account of a vibrating motion admitted to the axles by the friction wheels. They were discontinued; used but a short time; the friction wheels would stand still, and wear through in a single trip from Ellicott's Mills, which rendered them very unsafe."

Fifty-fourth cross-interrogatory. State whether, as a part of such deposition given by you before Levin Gale, Esq., in the said suit of Ross Winans against the Eastern Railroad Company, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. 207. How soon after you entered the service of the Company did you condemn the use of the Winans' friction wheel on a railroad car? or how soon did you determine for yourself that it was not suited for that purpose?" Also state whether you did not answer said questions as follows: "A. I think the first car was a passenger car; it gave proof that it could never be brought into general use, but alterations and improvements were made after that, that made them somewhat more durable, by chilling the inner surface of the friction wheel, and inclosing them in the side timbers and box. This was in 1830, during the summer, some time, that I determined in my own mind that friction wheels would not answer."

Fifty-fifth cross-interrogatory. State whether, as a part of such deposition given by you before John Carrere, Esq., in the suit of Ross Winans against the Schenectady and Troy Railroad Company, the following question was not addressed to you by the said Ross Winans on cross-examination: "Quest. What was your own opinion of the Winans' friction wheel at the time of the building of the Co-

lumbus?" Also state whether you did not answer the said question as follows:—

"Ans. My own opinion was that there were defects in the principle of the invention that could never be remedied so as to make it efficient."

Fifty-sixth cross-interrogatory. State whether, as a part of the deposition mentioned in the fifty-fifth cross-interrogatory, the following question was not addressed to you by the said Ross Winans on cross-examination: "Quest. Did not Mr. Winans furnish you with the plan, and direct you in the construction of the running gear, as well as of the body of the Columbus, or did any one else, or was the plan of the 8 wheel car your own invention?" Also state whether you did not answer said question as follows: "Ans. Mr. Winans did not furnish me with the plan and direct me in the construction of the running gear as well as the body of the Columbus. As far as my recollection serves me now, I drew down the plan on a scale of an inch and a half to a foot, on a board, which I worked by giving lengths and sizes, &c., and obtained the materials without reference to any other plan than my own."

Fifty-seventh cross-interrogatory. State whether, as a part of the deposition mentioned in the fifty-fifth cross-interrogatory, the following question was not addressed to you by the said Ross Winans, in cross-examination: "Quest. If you were, as already stated by you, the inventor of an 8 wheel car, and built the running gear without being furnished with a plan by Mr. Winans, or any one else, how came you holding the opinions of the friction wheel which you have expressed to adopt it for the running gear of the Columbus?" Also state whether you did not answer said question as follows: "Ans. Well, the reason was, that Mr. George Brown had the immediate direction of all such matters, and I generally worked from his directions as to the quantity and quality of the cars to be made; I do not know that I used the friction wheel under Mr. Brown's directions; I had used the friction wheels on other cars, and knew how to make them as well as Mr. Winans, and without his directions. It was not my province to reject the said wheel, and the principle of it had been adopted by the Company."

Fifty-eighth cross-interrogatory. State whether, as a part of the deposition mentioned in the fifty-fifth cross-interrogatory, the following question was not addressed to you by the said Ross Winans on cross-examination: "Quest. Do you say that you put friction wheels under the Columbus, because the friction wheel had been adopted by the Company, without any particular directions from any one? Did Mr. Brown direct you to put the friction wheels on the car?" Also state whether you did not answer said question as follows: "Ans. I cannot pretend to answer such a question as this from memory, and it being so far back. I have already stated Mr. Brown had directions of these matters. I do not know that Mr. Brown directed me to put the friction wheel to the Columbus."

Fifty-ninth cross-interrogatory. State whether, as a part of the deposition mentioned in the fifty-fifth cross-interrogatory, the following question was not addressed to you by the said Ross Winans on cross-examination: "Quest. Was the friction wheel on all the cars belonging to the Company, and if it was not, what do you mean by saying it was adopted by the Company?" Also state whether you did not answer said question as follows: "Ans. The friction wheel was not on all the cars belonging to the Company. I mean precisely what the City Council meant in adopting Cooper's plan of the Fayette Street Bridge."

Sixtieth cross-interrogatory. State whether, as a part of the deposition mentioned in the fifty-fifth cross-interrogatory, the following question was not addressed to you by the said Ross Winans on cross-examination: "Quest. Do I understand you to say, then, that you were governed in using friction wheels for the Columbus by your supposition that they had been formally adopted by the Company, and not by any direction from Mr. George Brown, or others?" Also, state whether you did not answer said question as follows: "Ans. No. I am not to be so understood because Mr. Brown had the specific direction of such matters, and the order or direction to do it came through Mr. George Brown."

Sixty-first cross-interrogatory. If you shall have stated that you made any drawing or drawings for any part of the car Columbus, state how long such drawing or drawings, or any of such drawings, remained in your possession, and what became of such drawing or drawings, and where such drawing or drawings is or are now.

Sixty-second cross-interrogatory. If, in answer to the sixty-third direct interrogatory, you shall have testified that the eight wheel wood cars used on the said road, before the Columbus was built, were used without a rod extending from one truck or perch pin to the other under the body framing, state whether, as a part of such deposition, given by you before Levin Gale, Esq., in the said suit of Ross Winans against the Eastern Railroad Company, the following question was not addressed to you by the counsel for the defendant: "Q. No. 63. As a general thing, had the eight wheel wood cars in use on the road before the Columbus was built, represented by model Ee, a rod also extending from one truck or perch pin to the other, under the body framing, or were they used without such rod?" Also state whether you did not answer said question as follows: "A. They generally bored a couple of holes in a piece of board, and slipped it over the perch pin, as a connection."

Sixty-third cross-interrogatory. State whether, as a part of such deposition given by you before Levin Gale, Esq., in the said suit of Ross Winans against the Eastern Railroad Company, the following question was not addressed to you by the counsel for the defendants: "Q. No. 92. Where did you get the drawing in the latter part of February, 1831, and where was it put for keeping?" Also state whether you did not answer said question as follows: "A. I think

I got the drawing from Mr. George Brown, and with it an order for a car to be built. I kept it for some considerable time in my possession; after the car was tolerably well under way, placed it in the chest of Mr. Oliver Cromwell."

Sixty-fourth cross-interrogatory. Was not the car Columbus the first swivelling double truck eight-wheeled car on the Baltimore and Ohio Railroad which had a body as a permanent fixture?

Sixty-fifth cross-interrogatory. Prior to the construction of said car Columbus, in every instance in which two four-wheeled trucks were used in connection, were not such trucks coupled together by a bar independent of the load, and not by a body?

Sixty-sixth cross-interrogatory. State whether, as a part of such deposition given by you before John Carrere, Esq., in the suit of Ross Winans against the Schenectady and Troy Railroad Company, you did not, on being cross-examined by the said Ross Winans, in said suit, testify as follows: "The first timber carried on eight wheels, on said road, was carried on two ordinary four wheel cars, used for carrying stones. As to the date, I cannot ascertain it, but so soon as we became acquainted with the advantages of using the eight wheel car, we made the centre timbers stronger, and placed the wheels closer together; but this was done in the latter part of 1831 or along through 1832: certainly in one of those years or the other, and before the building of the eight wheel passenger cars. At this time, the moving power on the road was horse power. Some experiments in steam power were made. Up to the time of the construction of the first eight wheel passenger car, the power was applied to the truck, and not to the body of the car, as it is at present. The trucks were coupled together (independent of the load) by a coupling bar, and not by a body, as at present, but before I left the road, the Columbus, the first eight wheel passenger car, which was coupled by a coupling bar, had also a body for passengers placed on the trucks as a permanent fixture, and it strikes me that this was the first eight wheel car on said road having a body as a permanent fixture."

Sixty-seventh cross-interrogatory. If, in answer to the one hundred and fifty-fifth direct interrogatory, you shall have stated, that when the car Columbus was first put upon the Baltimore and Ohio Railroad, she had leather thorough braces between the body and the bolsters, state whether the introduction of such thorough braces was not an alteration from the original plan, but made before the car was completed, and put upon the road, and whether Ross Winans did not give the directions for making the alterations necessary to put on such thorough braces.

Sixty-eighth cross-interrogatory. Was the car Columbus, as first completed and put on the road, or as subsequently altered, a successful car, and if yea, when were the alterations made which rendered her a successful car? And, if the said car Columbus was successful, state when, and by what action of the Baltimore and Ohio Railroad

Company, she was adopted as a car for regular and constant use on the road.

Sixty-ninth cross-interrogatory. State whether, since the year 1834, any swivelling double truck eight-wheeled cars have been used on the Baltimore and Ohio Railroad, coupled in a train by the trucks, and, if any, give their names or numbers, or a description of them, by which they can be identified, and state when and by whom they were planned, and when, and by whom they were constructed.

Seventieth Cross-interrogatory. Were not certain swivelling double truck eight-wheeled cars constructed for experiment on the Baltimore and Ohio Railroad, after the building and trial of the car Columbus and severally denominated the Dromedary, the Comet and the Winchester? And, if yea, state when and in what order as to time each was constructed and completed, and put upon the road, and by whom each was planned, and under whose directions each was constructed. And, if you shall have stated that they, or either of them, were, or was planned or constructed by you, or under your direction, describe particularly the construction and form of the body of each, the manner in which the bottom or platform of each was framed, the number and size of the windows and of the panes of glass in each side of each, the form and construction of the trucks of each, the diameter of, and distance between the wheels of each, the manner in which the trucks of each were connected with the body of each, and as to each whether it was drawn by the body or by the truck, and whether they or either of them, was or were altered in any and what particular after having been first completed.

Seventy-first cross-interrogatory. State whether, as a part of such deposition given by you before Levin Gale, Esq., in the said suit of Ross Winans against The Eastern Railroad Company, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 288. After the completion of the car Columbus, in 1831, did you construct any other eight-wheel passenger cars at said shops under your superintendence? And if yea, state how many were so constructed, previous to your leaving the service of said company, in 1834; and if they had names by which they were known, please state such names, and the order in which the said cars were placed on the said road." Also state whether you did not answer the said question as follows: "A. I did construct three other eight-wheel passenger cars. I recollect the names, but not distinctly, which went on the road first. The names were 'Winchester,' 'Dromedary,' and 'Comet,' I think."

Seventy-second cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 289. Did you plan the arrangement and construction of the said car Winchester?" Also state whether you did not answer the said question as follows: "A. I do not recollect."

Seventy-third cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 290. Will you state the object of her construction?" Also state whether you did not answer the said question as follows: "A. I do not recollect now whether the car with three distinct bodies on, was the Winchester or Comet, therefore, I cannot say what was the object of its construction."

Seventy-fourth cross-interrogatory. State whether, as a part of deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 291. Will you state how she differed from the Columbus, in construction or in proportions, or arrangement?" Also state whether you did not answer the said question as follows: "A. I do not recollect, as I stated before, which of the two cars was called the Winchester or Comet; therefore I cannot tell how they differed in arrangement."

Seventy-fifth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross examination: "X Q. No. 292. If you can state anything about the said car, do so." Also state whether you did not answer the said question as follows: "A. It is out of my power to give any statement in reference to said car, unless I recollect which of the two cars was called Winchester."

Seventy-sixth cross interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 293. What circumstance or thing led you to plan and arrange the car Dromedary; state fully." Also state whether you did not answer said question as follows: "A. If I recollect right, there were some accidents on some railroads in the country, from the breaking of axles, perhaps. It was thought by some of the officers of the company that a car body of a different construction would be safer. I was requested, I think, by Mr. George Gillingham, the superintendent of machinery at that time, to submit a plan to the consideration of the officers of the company. I did so, and the car was built under my direction."

Seventy-seventh cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 294. Was the said car Dromedary built on your own plans according to your own ideas, and from your own drawings only? and if not, who was connected with you relative to the getting up of said car, and what part of it was your own exclusively?" Also state whether you did not answer the said question as follows: "A. It was built from my own drawings entirely. I never saw any drawing of the Dromedary, or any por-

tion of it, except what I did myself. I might possibly have had ideas from other men, I cannot now say who; the general plan was my own."

Seventy-eighth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination. "X Q. No. 295. Will you state particularly in what particulars the said car Dromedary differed from the Columbus, in arrangement of parts, in the proportion of the respective parts, and in the relative position of the parts? State all you can about her." Also state whether you did not answer the said question as follows: "A. There were two trucks, with a strong centre piece, and the body was formed with two sides or bottom rails; the bottom rails after they passed to the rear of the running gears of each truck, turned down between the trucks to within about a foot of the railroad. The side rail was secured at the turn by boiler iron riveted on, on each side.

Her bolster was then firmly connected with the two side rails, say from four to five feet from each end, that rested on the middle cross piece or timber of the truck, through both of which passed the main or king bolt. The boiler iron, I think, ran along the entire length of the side rail.

Seventy-ninth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on examination: "X Q. No. 296. How much of that part of the car body of the said Dromedary projected over the bolster on the truck, or king bolt of the truck in which persons sat?" Also state whether you did not answer the said question as follows: "A. A very small proportion of it went over the bolster; perhaps from three to four feet."

Eightieth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 297. Had the said car Dromedary any kind of railing or anything above that part of the body in which passengers sat? If so, state what it was." Also state whether you did not answer the said question as follows: "A. I am not very certain as to the railing, but I judge there was some finish, perhaps of iron rods and small uprights to hold baggage."

Eighty-first cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cr s-interrogatory the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 298. How near were the wheels in each truck of the said car Dromedary as compared with the car Columbus?" Also state whether you did not answer the said question as follows: "A. I think the wheels were placed some where from eight to twelve inches apart, that is, the flanges."

Eighty-second cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 299. Were any and what changes made in the said car Dromedary, to your knowledge?" Also state whether you did not answer the said question as follows: "A. If there were any changes I judge they were made at the Mount Clare Depot; she was built at the Charles Street shops. There were no changes made to my knowledge; if there were any they were made at the Mount Clare depot. The shops there were not under my supervision at that time."

Eighty-third cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 300. Did the car Dromedary give satisfaction in use on the road? If not, what objection were found to her construction?" Also state whether you did not answer the said question as follows: "A. I cannot say whether she gave satisfaction or not; I was very seldom out on the road after I left the Mount Clare depot."

Eighty-fourth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 301. Did the car Winchester give satisfaction in use on the road; or what objection was found to her construction or arrangement?" Also state whether you did not answer said question as follows: "A. I do not recollect which of the other two cars were called Winchester; I have stated that two or three times."

Eighty-fifth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 302. Will you describe the car Comet, of which you have spoken?" Also state whether you did not answer the said question as follows: "A. If I knew which of the two cars was called the Comet I could describe it."

Eighty-sixth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 303. Will you describe the eight-wheel passenger car, which you planned and constructed first after the Columbus, for use on said road?" Also state whether you did not answer the said question as follows: "A. I cannot do that, for I do not recollect distinctly what car was built next."

Eighty-seventh cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 306. Will you now

describe singly the two other cars, called the Winchester and Comet, without reference to the names?" Also state whether you did not answer said question as follows: "A. One of them had three bodies, similar to coach bodies. There were two pieces placed on bolsters, and fastened firmly thereto, similar to model E. The bodies were fitted down into a concave, cut in the two timbers, and bolted fast to the said timbers. The other car I have very little recollection of at all."

Eighty-eighth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 307. Can you not describe more fully the three-bodied car of which you have spoken? If yea, do so as fully as you can." Also state whether you did not answer the said question as follows: "A. In addition to what I have stated I can only say that she was placed upon two trucks; her construction I cannot recollect precisely."

Eighty-ninth cross-interrogatory. State whether, as part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 308. Are you not able to describe more particularly either the Winchester, the Dromedary, or the Comet; and is the 'three-bodied car,' of which you have spoken in your last answers, one of the three cars above named? State fully with reference to the description of the cars." Also state whether you did not answer the said question as follows: "A. The three-bodied car was one of the three; I described it yesterday as nearly as I could; I have also described the Dromedary. The other car I recollect but little about."

Ninetieth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination: "X Q. No. 309. Were all or either of these three eight-wheel passenger cars regularly used for the transportation of passengers in trains, drawn by the locomotive engine, while you were connected with said Company? And, if yea, state particularly all you know as to such use." Also state whether you did not answer said question as follows: "A. They were eight-wheel passenger cars; but how they were drawn, whether by horse power or locomotive power, I don't know."

Ninety-first cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination. "X Q. No. 310. When these cars were drawn by horses, was such car connected with others, to be drawn by the same team, or was it regarded as a load, to be drawn alone? State fully." Also state whether you did not answer said question

as follows: "A. I have no particular recollection how they were drawn."

Ninety-second cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory the following question was not addressed to you by the counsel for plaintiff on cross-examination. "X Q. No. 311. Can you state whether or not locomotive steam power was at the time in use on said road when either of these cars was first placed on said road for use? And if yea, which of them?" Also state whether you did not answer said question as follows: "A. They were experimenting in locomotive power in 1832, 1833, and 1834. I think in 1834 some successful experiments were made from locomotives that were used."

Ninety-third cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory the following question was not addressed to you by the counsel for the plaintiff on cross-examination. "X Q. No. 312. Can you state whether either of these three passenger cars was arranged to draw by the body? And if yea, which of them?" Also state whether you did not answer said question as follows: "A. I don't recollect that either of them was arranged to draw by the body at the time they were first built."

Ninety-fourth cross-interrogatory. State whether, as a part of the deposition mentioned in the seventy-first cross-interrogatory, the following question was not addressed to you by the counsel for the plaintiff on cross-examination. "X Q. No. 313. Will you state why you did not arrange one or more of them to draw by the body, if, as stated by you, that long previous to the construction of either of them, you understood and had knowledge of the advantages to be derived from the free action of the trucks, when the car, of which the said trucks formed a part, was in motion on a railroad?" Also state whether you did not answer said question as follows: "A. The work that I did was chiefly designed for horse power; the cars not intended to run in trains. After the introduction of steam, the connections were made from the bodies."

Ninety-fifth cross-interrogatory. If in answer to any direct interrogatory, you shall have testified that there were double truck eight wheeled cars used for the transportation of cordwood on the Baltimore and Ohio Railroad in 1830, state whether it was not the practice of the Baltimore and Ohio Railroad Company to have all their freight and burden cars numbered; and if yea, specify the numbers that were on the cars, which you may, in answer to the twenty-fifth direct interrogatory, have testified were used for the transportation of cordwood on the said road in 1830.

Ninety-sixth cross-interrogatory. If you shall have stated, in answer to any direct interrogatory, that there were a greater number of eight wheeled cars on the said road for the transportation of cordwood by the 1st of April, 1831, than there were in the fall of 1830, state how many more of such cars there were on the said road by

the 1st of April, 1831, than there were in the fall of 1830, and when and where and under whose direction all of such cars that were on the said road by the 1st of April, 1831, were constructed, and what numbers were on each of them?

Ninety-seventh cross-interrogatory. If you shall have testified in answer to any direct interrogatory, that the carriage and horses of Ex-President John Quincy Adams or of any other distinguished individual were transported on said road in the month of December, 1830, state whether the said horses were not placed on one four wheeled platform car, and the said carriage on another four wheeled platform car, and whether such two platform cars were not there coupled together and drawn by one and the same team; and whether horses and carriages had not been transported on said road frequently prior to the occasion of the transportation of such carriage and horses in December, 1830?

Ninety-eighth cross-interrogatry. If in answer to any direct interrogatory you shall have annexed or identified any drawing or model of any car, or of any part of any car, state who made each one of such drawings, and who made each one of such models, and when and by whom each one of such drawings, and when and by whom each one of such models was furnished to you.

Ninety-ninth cross-interrogatory. Did you see, or read, or hear read, or hear stated, the direct interrogatories or the cross-interrogatories in this commission, or any and which of them, or the substance of them or of any and which of them, prior to your appearing to answer them under this commission? And did you read or hear read or hear stated the said cross-interrogatories or any and which of them, or the substance of them or of any and which of them, prior to your having answered all of the said direct interrogatories? And by whom were such direct interrogatories or such cross-interrogatories or any of them so shown or read or stated to you, or to any other person or persons in your presence or hearing?

One hundredth cross-interrogatory. Did you, before answering the said direct interrogatories or the said cross-interrogatories or any of them, see or read or hear read or hear stated any part of, or the substance of any part of, any testimony given or affidavit made by you or by any other person or persons in the case of Ross Winans against the Eastern Railroad Company, or in the case of Ross Winans against Orsamus Eaton and others, or in the case of Ross Winans against the New York and Harlem Railroad Company? And, if yea, in what case was such testimony or affidavit given, and by whom was the same read or shown or stated to you or to any other person or persons in your presence or hearing?

One hundred and first cross-interrogatory. Name all the persons who have been present at any time during the execution of this commission or of any part of the same, or during the giving of any answer of yourself or of any other witness to any direct or cross-interrogatory thereunder.

One hundred and second cross-interrogatory. Did you, before answering the said direct interrogatories, or the said cross-interrogatories, or any of them, see, or read, or hear read, or hear stated, or have placed in your hands, any written or printed book, sheet, paper, or memorandum having reference to any of said direct interrogatories, or to any of said cross-interrogatories, or containing or having reference to any answer, or any part of any answer, or the substance of any answer, or of any part of any answer, to be given or that has been given by you to any of said direct interrogatories or to any of said cross-interrogatories? And, if yea, state by whom such book, sheet, paper, or memorandum was placed in your hands, or by whom such book, sheet, paper or memorandum was read, or shown, or stated to you or to any other person or persons in your presence or hearing. Also state whether, in answering any of said direct interrogatories or any of said cross-interrogatories, or any part of any one of the same, you have testified from any written or printed book, sheet, paper or memorandum; and if yea, state what every such book, sheet, paper or memorandum was, and where you procured it, and who made it, and when it came into your hands, and who gave it to you, and annex a correct copy of every such book, sheet, paper or memorandum, and give the number of every direct interrogatory, and of every cross-interrogatory, in answering which you testified from any such book, sheet, paper or memorandum. Also state whether any person has made any suggestion to you in any way, or given you any instruction verbally or in writing, as to what your answer ought to be or should be to any of said direct interrogatories, or to any of said cross-interrogatories, or to any portion of any one of the same; and, if yea, state from whom and when you received such suggestion or instruction, and what such suggestion or instruction was, and whether it was verbal or in writing, and, if verbal, give the words of the same, and, if in writing, annex a copy of such writing, and give the number of every direct interrogatory and of every cross-interrogatory, to which, or to any part of which, or to your answer or any part of your answer, to which such suggestion or instruction had reference.

One hundred and third cross-interrogatory. Do you know any other matter or thing touching the matters in controversy in this suit, which may tend to the benefit or advantage of the plaintiff? If yea, declare the same as fully and at large, as if you had been particularly interrogated thereunto.

BLATCHFORD, SEWARD & GRISWOLD,
Plaintiffs' Attorneys.

CIRCUIT COURT OF THE UNITED STATES,
for the Northern District of New York.

ROSS WINANS
against
THE NEW YORK AND ERIE RAILROAD COMPANY.

Additional cross-interrogatories to be administered to John M. Eichelberger, Conduce Gatch, Jacob Rupp, and Leonard Forrest. Witnesses to be produced, sworn (or affirmed), and examined under and by virtue of the annexed commission, before John Hanan, United States Commissioner, residing at (or near) Baltimore, in the State of Maryland, the commissioner therein named in a certain cause now pending and at issue in the Circuit Court of the United States for the Northern District of New York, wherein Ross Winans is plaintiff, and the New York and Erie Railroad Company is defendant, on the part and behalf of the defendant. Said additional cross-interrogatories being in reply to the additional interrogatories to said Eichelberger, Gatch, Rupp, and Forrest, on the part of the defendant.

First cross-interrogatory. If, in answer to the first additional direct interrogatory, you shall have annexed or identified a drawing of either the Columbus, the Winchester, the Dromedary, or the Comet, or of all of said cars, state who made each one of said drawings, and when and by whom each one of said drawings was furnished to you.

Second cross-interrogatory. If, in answer to the second additional direct interrogatory, you shall have testified that the cars Columbus, Winchester, Dromedary, and Comet, or either of them, were or was used by the Baltimore and Ohio Railroad Company in carrying passengers for fare or pay, state whether you had anything and what to do personally with receiving such fare or pay.

Third cross-interrogatory. Do you know any other matter or thing touching the matters in controversy in this suit which may tend to the benefit or advantage of the plaintiff? If yea, declare the same as fully and at large as if you had been particularly interrogated thereunto.

BLATCHFORD, SEWARD & GRISWOLD,
Plaintiff's Attorneys.

Conduce Gatch, of the City of Baltimore, in the State of Maryland, aged fifty-six years, being duly and publicly sworn, pursuant to the directions hereto annexed, and examined on the part of the defendants, doth depose and say as follows:—

1st. To the first interrogatory, he saith: My name is Conduce Gatch. I am now fifty-six years of age. Am a millwright by profession. And now reside in the City of Baltimore, in the State of Maryland. I know Ross Winans, the plaintiff in this suit, since 1831. I don't know the defendants.

2d. To the second interrogatory, he saith: I engaged personally with them in March or April, 1830, and it terminated in May or June, 1834.

3d. To the third interrogatory, he saith: My duties were purchasing lumber and building cars of all the various kinds then used on the Baltimore and Ohio Railroad. I was so engaged at the shops of the Baltimore and Ohio Railroad Company. The shops were located at two different places; first at Mount Clare, and then at the corner of Charles and Camden Streets.

4th. To the fourth interrogatory, he saith: I took a list off of my books—Washington Frost, Francis A. Gatch; they commenced April 3d, 1830. Michael Glenn commenced to work 17th April, 1830; John Eichelberger, painter, 11th of June, 1830; Plummer Sank, and Isaiah Terry, commenced 3d of April, 1830; Jacob Rupp, 16th April, 1830; Oliver Cromwell, 31st May, 1830; C. Baker, 11th June, 1830; Reuben Aler, 25th of June, 1830—he is dead; Emanuel Eichelberger, August 17th, 1831; John Rupp, commenced April 25th, 1831. Then there were six or seven laborers. I did not take their names.

5th. To the fifth interrogatory he saith: Francis A. Gatch is dead; Charles Baker is dead; Reuben Aler is dead; that is all that are dead that I know of.

6th. To the sixth interrogatory he saith: That was my business entirely.

7th. To the seventh interrogatory he saith: Francis A. Gatch and Jacob Rupp worked at the frame work or running gear of the cars in the same shop.

8th. To the eighth interrogatory he saith: He was a carpenter by profession, and worked in the same shop that Rupp and Francis A. Gatch worked in; he frequently worked out at fencing, making gates, and at repairing and putting up shops and buildings; also at the cars.

9th. To the ninth interrogatory he saith: Sank worked but a short time, and what time he worked there he worked at the cars, and Terry assisted in laying down the first turn-out and switches that were ever laid down on the road, under the direction of Mr. Whistler, I think, one of the engineers on the road; he also worked but a short time. Sank worked in the same shop with Glenn.

10th. To the tenth interrogatory he saith: Oliver Cromwell worked in the coach shop, fronting on a line with the other shop, the shops being about three feet apart; a part of the time he had Francis A. Gatch with him; the rest of the time he worked alone. C. Baker worked in the shop with Glenn, and Jacob Rupp, Reuben Aler, Emanuel Eichelberger, and John Rupp, also worked in the same shop with Glenn and Jacob Rupp. The shops were very temporary, and have been torn down since; the shops were at Mount Clare.

11th. To the eleventh interrogatory he saith: It was the car shop where the car bodies and running gear was made. Reuben Aler

was wheelwright, and worked at shafts principally; the others worked at car bodies and running gear.

12th. To the twelfth interrogatory he saith: The cars built there were built with four wheels, the wheels from three to seventeen inches apart—that is, the flanges. The frame work constructed with two side pieces, or timbers, three cross pieces bolted firmly together, with a perch piece that the horses drew by, with four pieces for the body or platform to rest on; the platform cars or trucks were used for various purposes; the cars with bodies had falling doors on the sides, and were used for transporting different things.

To haul long timbers two of the trucks were used with a centre plate and bolster for each truck, with a standard in each end, a bolt passing down through the bolster and the centre of the truck; the timber placed on the bolsters, which enabled the trucks to pass through the switches and curves; each truck had four wheels.

For hauling cord-wood a bolster was used similar to the one above described on each truck with two pieces of square timber, bolted to the bolsters and the standards placed on the timbers connecting the bolsters, they then with that frame-work formed an eight wheel car similar to the model E.

They were arranged or built to haul carriages and horses, with a frame work that rested on bolsters similar to those described with uprights on each side, forming a trussel work, that rested on two four-wheel trucks with a gate at each end, that let down to the track and formed a platform or gangway to take horses and carriages up on into the car.

13th. To the thirteenth interrogatory he saith: I think it was in April or May of 1830.

14th. To the fourteenth interrogatory he saith: The string pieces were six inches square, and the average length about thirty-six feet. They were hauled and used in laying the track of the road, except such as were used to construct the wood cars.

15th. To the fifteenth interrogatory he saith: I described that in my answer to the twelfth interrogatory.

16th. To the sixteenth interrogatory he saith: In the first place, we were enabled, in the introduction of the trucks to these purposes, to bring the wheels closer together or close together. In the construction of cars and the arrangement with the bolsters, the cars or trucks in motion passed easily through the switches and curves, the weight of the load being brought to a very small point or bearing, which, previous to this time, was not the case.

17th. To the seventeenth interrogatory he saith: I did, and changed their position to any angle to the burthen.

18th. To the eighteenth interrogatory he saith: The drivers invariably rode on the timbers, and carried such of the hands as were permitted to ride on the burthen cars.

19th. To the nineteenth interrogatory he saith: The principle in relation to the running gear passing through switches and curves on

the road, and its movement under the load, whether of passengers, coal, or lumber, or merchandise, is precisely the same.

20th. To the twentieth interrogatory he saith: I done it myself.

21st. To the twenty-first interrogatory he saith: In November, 1830, the first were made, some afterwards in December.

22d. To the twenty-second interrogatory he saith: As near as I can recollect, some six or eight.

23d. To the twenty-third interrogatory he saith: The operation of the car on the road was precisely the same as under the long timber.

The construction was made by placing two pieces of sufficient strength about four feet apart, from out to out on the bolsters, and bolting them fast to said bolsters, and mortising standards in those pieces, say sixteen to twenty feet apart, sufficient distance to carry two cords of wood, and placing the wood across and against the standards, to prevent its falling off.

24th. To the twenty-fourth interrogatory he saith: This represents the cars used on the Baltimore and Ohio Railroad, in the winter of 1830–31, to haul wood to the Mount Clare depot. It is marked "Exhibit Model E."

25th. To the 25th interrogatory he saith: The first was made in November, 1830.

26th. To the twenty-sixth interrogatory he saith: They had eight wheels, four wheels in each truck; they were constructed as described in my answer to the 12th interrogatory, and differed from the model of the wood car, "Exhibit E," in having the floor and frame work on the sides on the body timbers, and the doors to let down at the ends. This model E represents that car.

27th. To the 27th interrogatory he saith: They were about the middle of December, eighteen hundred and thirty.

28th. To the twenty-eighth interrogatory he saith: In May, eighteen hundred and thirty.

29th. To the twenty-ninth interrogatory he saith: The car Columbus was the next for carrying passengers. She was commenced in February or March, eighteen hundred and thirty-one.

30th. To the thirtieth interrogatory he saith: I do not recollect the number—the number was increased from time to time as there was necessity for them, and the road advanced.

31st. To the thirty-first interrogatory he saith: In the latter part of the year eighteen hundred and thirty.

32d. To the thirty-second interrogatory he saith: The gauge was, I think, four feet nine inches; we made a great many gauges for the men on the road.

33d. To the thirty-third interrogatory he saith: I was principally in repairing cars; I mentioned the time, I think it was in eighteen hundred twenty-nine, thirty, through the winter.

34th. To the thirty-fourth interrogatory he saith: The President of the Baltimore and Ohio Railroad Company, Mr. Philip E.

Thomas, Mr. Alexander Brown and Mr. George Brown, all three came to see me, and employed me for the Company.

35th. To the thirty-fifth interrogatory he saith: Yes, there was one; I had it built; Leonard Forrest was the principal smith, he had a helper, a colored man, by the name of Parraway.

36th. To the thirty-sixth interrogatory he saith: Some short time after I engaged with the Company; I don't know exactly the time; it might have been a month or two after.

37th. To the thirty-seventh interrogatory he saith: I designed or invented them, and they were built by my direction, and the order of George Brown, who was superintendent at the time.

38th. To the thirty-eighth interrogatory he saith: They were designed by me; as to the invention, I don't suppose there was any invention about it. I had the privilege from the President and Mr. Brown, the officer in charge, to make any improvement that suggested itself to my mind. I looked upon it as an improvement more than an invention.

39th. To the thirty-ninth interrogatory he saith: They are continued in use.

40th. To the fortieth interrogatory he saith: The running gears of the Columbus were put together very nearly in the same manner that the common trucks were put together; two side-pieces and three cross-pieces, the centre cross-piece made of locust, obtained about the shape required to give strength, that shape formed by the natural growth of the stick, and an inch rod directly under the centre cross-piece; the best timber was selected, and a better finish put on the work.

The body, I think, was about twenty-four feet long, and about seven feet wide. I think the ends were made octagon shape; the doors were placed diagonally; the timber that took the weight under the body was about six feet from the ends. The body was composed of two bottom rails for the outside and two lighter rails inside for the floor to rest on; the uprights were about two feet from centre to centre, to let the slides and sash work in between the connections between the trucks and the body were made by an iron plate on the centre-piece of the truck, and a corresponding plate on the bearing timber under the body, and a bolt passed down through the floor and through the timber bolsters.

There was also a circular piece of wrought iron to work in the rollers inserted in the bottom bolster, to prevent the body from carreening over to one side too much. She was completed on or about the 4th of July, 1831, and put on the road at that time; the mechanics that were employed on her rode out on her, I think, on the 4th of July, 1831.

41st. To the forty-first interrogatory he saith: By what was called a perch-piece, bolted down firmly on the three cross-pieces or cross-timbers.

42d. To the forty-second interrogatory he saith: It was built

under my directions; I furnished the drawing for the running gear or trucks; I made the drawings on a board, the scale an inch and a half to the foot.

I purchased all the lumber, and gave directions to all the mechanics that worked on her. There was handed to me a drawing of the outlines of the body, merely two lines showing the bottom rail, and two the top, two lines to represent the uprights, colored yellow between the lines. I do not know whether the drawing was handed to me by George Brown, or by whom. There was no direction connected with the body, or the drawing, and no figures to show the size of anything about it. That is about as near as I can come at the answer.

43d. To the forty-third interrogatory, he saith: No, sir.

44th. To the forty-fourth interrogatory, he saith: No, sir.

45th. To the forty-fifth interrogatory, he saith: Jacob Rupp was the principal hand, and Francis A. Gatch, and I think John Rupp assisted him.

46th. To the forty-sixth interrogatory, he saith: The drawing was in my possession whilst we were at work upon the car, it was placed in a chest of Oliver Cromwell for safe keeping, but no work was done without my directions.

47th. To the forty-seventh interrogatory, he saith: I do not know that there was any attention paid to the drawing, more than to give the outlines of a body. I do not know that it was drawn to a scale, as there were no directions or dimensions with it.

48th. To the forty-eighth interrogatory, he saith: Oliver Cromwell was the principal hand, and Francis A. Gatch and Henry Lybrand, I think also worked on it; Gatch, I know did, and Lybrand I think did.

49th. To the forty-ninth interrogatory, he saith: Leonard Forrest.

50th. To the fiftieth interrogatory, he saith: John Eichelberger.

51st. To the fifty-first interrogatory, he saith: He held the position of superintendent of the car building, and improvements generally about the depot; he was there in the years 1830, and 1831, I believe; he acted without a salary, I believe.

52d. To the fifty-second interrogatory, he saith: George Gillingham filled it, now deceased.

53d. To the fifty-third interrogatory, he saith: Mr. Jonathan Knight.

54th. To the fifty-fourth interrogatory, he saith: There was an half inch rod extended around the top, leaving two openings for steps placed on the outside; the rod was about ten inches high, and passed through an eye on the top of an upright, screwed fast to the top of the coach, or car, merely to prevent trunks or baggage from falling off.

55th. To the fifty-fifth interrogatory, he saith: No, sir.

56th. To the fifty-sixth interrogatory, he saith: The steps occu-

pied the diagonal corners from the doors; they were placed there for the convenience of putting up baggage, or for the driver.

57th. To the fifty-seventh interrogatory, he saith: There was. The railing placed, or rather uprights to secure an awning; it was not a railway; and the net work some two feet high connected with the uprights around; it was put there for the purpose of securing an awning for the comfort of passengers on top. The precise time the change was made, I don't know.

58th. To the fifty-eighth interrogatory, he saith: It was done in the spring of 1832. The spring after she was first built. Leonard Forrest did the iron work of this alteration, in the Company's shop under my direction, and George Bartol did the work.

59th. To the fifty-ninth interrogatory, he saith: July 4th, 1831, was the first time she was on the road; there were some few alterations made afterwards, which made it late in the season, and the awning was not required.

60th. To the sixtieth interrogatory, he saith: There was a rod placed there to connect the trucks together; it was a small rod with an eye at each end passed over a hook or pin, I forget which; it was put there to secure the trucks together; it was ascertained that the trucks, in passing through the switches and curves, deployed off on the outer circle and required more length than on a straight line. I think it was a general order to connect all the cars or trucks, all the eight wheel cars. That caused the rod to be placed there. It was removed very shortly after the car started out, the reason was the same distance apart was not retained in all parts of the road between the cars or trucks.

61st. To the sixty-first interrogatory, he saith: I did not approve of it, and had told the drivers frequently that it was useless in hauling timber.

62d. To the sixty-second interrogatory, he saith: It was removed before.

63d. To the sixty-third interrogatory, he saith: They generally bored a couple of holes in a piece of board and slipped it over the perch pin as a connection.

54th. To the sixty-fourth interrogatory, he saith: It was generally slipped on loosely, and the holes made large like that in the "Exhibit Model E."

65th. To the sixty-fifth interrogatory, he saith: That was the intention, the better security of the connection in case of a breakage.

66th. To the sixty-sixth interrogatory, he saith: I have no intimate acquaintance with their construction in that respect.

67th. To the sixty-seventh interrogatory, he saith: I had no personal acquaintance with Mr. Winans, and do not know what he was engaged in at that time.

To the sixty-eighth interrogatory, he saith: I invented and introduced the plain-ended springs working in a cast iron pocket.

I also invented and introduced shifting backs to the seats; the ring on the end of the axles for oiling the journals. The present brakes used on the road was an invention of mine, but was not introduced until after I left.

69th. To the sixty-ninth interrogatory, he saith: The seats, when first built, were placed lengthwise of the two sides in the centre back to back; when the change was made in the Columbus, they turned her on a swivel end for end; it was done at a swivel on the centre of two tracks, crossing at right angles, the foremost truck turned and ran off on the right angle track, the other truck passing up to the swivel and over on the straight line, the first truck being brought back to the swivel, and turned again to the straight line. It was necessary in all coaches, at that time, where the driver's seat was at one end, and no shifting backs to the seats.

70th. To the seventieth interrogatory, he saith: They were not applied to the Columbus. They were applied to other cars in 1833. I do not recollect precisely the car.

I think perhaps it was first applied to the Comet, or the Dromedary or the Winchester to some of those cars.

71st. To the seventy-first interrogatory, he saith: Leonard Forrest, blacksmith, was the first man I named it to, and he made the work.

72d. To the seventy-second interrogatory, he saith: She was used from July, 1831, until I left the road in May or June, 1834, to my knowledge.

73d. To the seventy-third interrogatory, he saith: The top of the Columbus was arched, I suppose some three or four inches, merely to pass off the rain, and was formed and prepared similar to the passenger coaches then on the road, with a rod around to prevent baggage from falling off.

74th. To the seventy-fourth interrogatory, he saith: There was a general order at that time that each four-wheeled car should not contain more than two and a half tons of produce, or stone or lumber.

75th. To the seventy-fifth interrogatory, he saith: There was an order given to ascertain the weight of a half of a cord of green oak wood. It was ascertained to weigh from twenty-five to twenty-seven hundred, which fixed the amount to be carried on an eight-wheel car.

76th. To the seventy-sixth interrogatory, he saith: I think not any of the four-wheel trucks. This exhibit now filed and marked H, is a drawing of the flour car with friction wheels.

77th. To the seventy-seventh interrogatory, he saith: They were applied chiefly to the four-wheel passenger cars, to some few cars for merchandise. The wheels were used further apart than most of the plain box cars. It was not necessarily so, but they passed easier through the switches and curves on account of a vibratory motion admitted to the axles by the friction wheels. They were discon-

tinued; used but a short time, the friction-wheels would stand still and wear through in a single trip from Ellicott's Mills, which rendered them very unsafe.

78th. To the seventy-eighth interrogatory, he saith: The action of the weight was reduced to so small a surface on the end of the axle, that it soon got dry, heated the axle, and the friction-wheel being exposed to the grit and dust on the road wore through.

79th. To the seventy-ninth interrogatory, he saith: The wheels under the trucks were about the same distance apart; they varied from three to ten inches; I suppose the average of them, that is, the flanges, were that far apart; I don't know that we selected them particularly, all of them being sufficiently near to answer the purpose of passing through switches and curves.

80th. To the eightieth interrogatory, he saith: I think not.

81st. To the eighty-first interrogatory, he saith: Yes, sir.

82d. To the eighty-second interrogatory, he saith: Universally, I believe.

83d. To the eighty-third interrogatory, he saith: They were.

84th. To the eighty-fourth interrogatory, he saith: Yes, sir.

85th. To the eighty-fifth interrogatory, he saith: The winter of 1831–32 was a very severe winter, and a great deal of snow fell. There was a great amount of wood required; I can't say to what amount, but all the wood on the road that was offered they brought in pretty much. Box cars and trucks were used, prepared with standards, besides the eight-wheel cars.

86th. To the eighty-sixth interrogatory, he saith: The box cars were used by placing standards at the ends, the wood thrown in crosswise; the trucks were used by placing two pieces on the top of the trucks lengthwise, with the standards placed in them.

87th. To the eighty seventh interrogatory he saith: There were cars prepared for carrying two ranks or tiers, by placing four timbers lengthwise on the bolsters, and the wood thrown on from each side.

88th. To the eighty-eighth interrogatory, he saith: There were three: the Winchester, the Dromedary, and the Comet. These drawings hereto annexed, marked with their names, are correct representations of them.

89th. To eighty-ninth interrogatory, he saith: In relation to the swivelling principle of the trucks passing through curves and switches under weight, they were the same.

90th. To the ninetieth interrogatory, he saith: I have made one similar to one produced in another case marked G. It represents the outlines of a car body.

91st. To the ninety-first interrogatory, he saith: I had such a drawing in my possession from the latter part of February, 1831. I think it was. It remained in my hands for some two or three months; I put it in Cromwell's chest; I do not know then what became of it.

92d. To the ninety-second interrogatory, he saith: I think I got

the drawing from Mr. George Brown, and with it an order for a car to be built. I kept it for some considerable time in my possession, after the car was tolerably well under way; I placed it in the chest of Oliver Cromwell.

93d. To the ninety-third interrogatory, he saith: It is.

94th. To the ninety-fourth interrogatory, he saith: This is drawn to the scale of three-quarters of an inch to the foot.

95th. To the ninety-fifth interrogatory, he saith: In reference to the length, it is made on the scale of an inch to the foot; the distance at which the trucks are apart appears to be about that, that is, an inch to the foot; all the lengths are on that scale; the dimensions of the trucks are on that scale, and the distance at which they are apart.

96th. To the ninety-sixth interrogatory, he saith: They are also an inch to the foot.

97th. To the ninety-seventh interrogatory, he saith: I recollect of his stating to me, in the latter part of 1834, or in the early part of 1835, whilst he was engaged in building some cars by contract, that he had proposed to Mr. Gillingham a plan for drawing the cars; he also described to me the manner; the manner was to extend the bottom timbers out some two feet, or two and a half, bolt two pieces on firmly, one at the bottom, the other at the top; let the coupling bolt pass down through, the coupling itself playing between them.

98th. To the ninety-eighth interrogatory, he saith: Jacob Rupp did construct the plan of drawing the cars that he described to me.

99th. To the ninety-ninth interrogatory, he saith: The distance, I think, was about from twelve to fifteen inches apart in the flanges, the diameter of the tread of the wheel about thirty inches; the first had plain boxes, and was altered and fitted up with Winans' friction wheels, but they were found too weak and unsafe for the load that was placed on her generally; a change was then made back again to plain boxes.

100th. To the one hundredth interrogatory he saith: They were the same, I think—thirty inches in the tread; there was no difference, I think, in the wheels then used.

101st. To the one hundred and first interrogatory he saith: I was acquainted with him; he worked with Messrs. Buddy & Colvin, at the corner of Howard and Pratt Streets, at the northwest corner, and, I think, served his apprenticeship with them.

102d. To the one hundred and second interrogatory he saith: Yes, sir; one truck out of the two generally had a break.

103d. To the one hundred and third interrogatory he saith: I understood that he was engaged in getting up machinery, and some heavy framing for stationary power, at the summit of Parr's ridge, for the purpose of passing the cars over on an inclined plane.

104th. To the one hundred and fourth interrogatory he saith: Mr. Winans was employed on machinery for stationary power for the inclined plane.

105th. To the one hundred and fifth interrogatory he saith: I considered myself permanently employed by the Railroad Company, and conceived it to be my duty to do all I could for the interests of the Company and community.

106th. To the one hundred and sixth interrogatory he saith: Yes, sir, I did.

107th. To the one hundred and seventh interrogatory he saith: He had no authority to direct me at all, and I received no orders from him.

108th. To the one hundred and eighth interrogatory he saith: An iron plate was used, about six inches square, with screw or bolt holes at the corners; the plate on the truck had a hole about an inch and a quarter in diameter in it, and the perch pin and plate was used on the bolster—the perch pin passing through the hole in the plate on the truck.

109th. To the one hundred and ninth interrogatory he saith: The first were used from cars that had been broken; some little alterations, perhaps, had been made in them.

110th. To the one hundred and tenth interrogatory he saith: Figures 1 and 2 represent the ground plan and elevation of the running gears of the car Columbus, and Figure 3 represents an elevation view of bolster and thorough brace connected with the same car. Figure 4 represents the railing that was first put on the car Columbus, on top finish, to keep light articles from falling off, baggage, and so forth.

The drawings, Figures 1 and 2, are similar to the drawings I made on a board to build the running gear of the Columbus by. The drawing is hereto annexed, marked "Defendant's Exhibit I."

111th. To the one hundred and eleventh interrogatory he saith: There are only portions of it on the drawings that are lettered; as far as they are lettered I can. A A are the wheels; B the bolster; C represents the cross-rod, or bolt, just under the bolster; D the perch piece the car was drawn by; those are all the letters on Figure 1; E E the rail of the road. Figure 2, represented by the same letters, with the addition of G G, represents the rollers on the bolsters, and H the king bolt.

Figure 3. I represents an iron circular plate that worked on the rollers; K the movable bolster; L a leather thorough brace; M a circular piece connected with the body that sat on the thorough brace; N the bottom of the body; H represents the king bolt.

Figure 4. O O represents two rods passing round and through the uprights; P the top of the body; R R the uprights; the rods passed through, with a scroll on the top.

112th. To the one hundred and twelfth interrogatory he saith: S S are on the boxes or bearings of the car.

113th. To the one hundred and thirteenth interrogatory he saith: July, 1831.

114th. To the one hundred and fourteenth interrogatory he saith: What we call plain chilled boxes.

115th. To the one hundred and fifteenth interrogatory he saith: Leonard Forrest.

116th. To the one hundred and sixteenth interrogatory he saith: Leonard Forrest did the smith work, and John Eichelberger painted it.

117th. To the one hundred and seventeenth interrogatory he saith: The change of the baggage rods to net-work, and awning over it, was made in the next April or May following. The change to friction wheels I cannot say whether it was the same season that the car was built, or at the same time the awning was put up.

118th. To the one hundred and eighteenth interrogatory he saith: They did not.

119th. To the one hundred and nineteenth interrogatory he saith: The friction wheels were removed, and side pieces also, and a new chilled box—something different in its construction from the first—was put on, and new side pieces.

120th. To the one hundred and twentieth interrogatory he saith: Yes, sir.

121st. To the one hundred and twenty-first interrogatory he saith: The friction wheels had not boxes enclosing them when they were first used on the road; the side pieces of the car were made generally out of ash timber, about four by eight, and mortise made through a little more than the size of the diameter of the friction wheel. The bearings of the friction wheel were on the under side of the side piece, and the friction wheel passed up through the mortise high enough above the side piece to receive the end of the axle on the inner surface of the bearing part of the friction wheel. They were called Winans' friction wheels.

122d. To the one hundred and twenty-second interrogatory he saith: There were boxes enclosing the bottom part of the friction wheels, used on a few of the four-wheeled cars. I do not know the precise time the boxes were introduced. The side pieces were made of two pieces—three by eight I think was the size—fitted up and bolted firmly together, and a mortise made in the centre from the under side, with a circle corresponding with the periphery of the friction wheel, leaving room in the mortise for the friction wheel to work free. The half diameter of the friction wheel was then below, and a cast-iron box was introduced, bolted on the side timber or frame, large enough to receive the friction wheel without touching. They were Winans' friction wheels. I do not know who introduced the boxes enclosing them.

123d. To the one hundred and twenty-third interrogatory he saith: They were never used on but one eight wheel car, to my knowledge—that was the Columbus; and they were abandoned altogether then.

124th. To the one hundred and twenty-fourth interrogatory he saith: They were.

125th. To the one hundred and twenty-fifth interrogatory he saith: The friction wheel was enclosed by the side timber; the mortise or cavity that it run in not coming through the timber by about an inch and a half; an oblong hole was then made in the side piece, about two and a quarter by about two and three quarters, through which hole the axle passed, and the inner surface of the friction wheel hung on the end of the main axle.

126th. To the one hundred and twenty-sixth interrogatory he saith: I think it is possible there were some running at the time she was finished. I don't recollect that there were any on the road when we commenced to build her, unless a few of the flour cars.

127th. To the one hundred and twenty-seventh interrogatory he saith: They were placed on cars for hauling flour from Ellicott's Mills first, transportation car. I recollect them.

128th. To the one hundred and twenty-eighth interrogatory he saith: A civil engineer, I always understood.

129th. To the one hundred and twenty-ninth interrogatory he saith: He worked journeyman's work at a turning lathe, turning iron.

130th. To the one hundred and thirtieth interrogatory he saith: I understood he came from the State of New Jersey. I understood he was a wood turner, a spinning wheel maker.

131st. To the one hundred and thirty-first interrogatory he saith: George Gillingham carried on a blacksmith's shop. Yes, he fitted up mill spindles, and worked on mill machinery.

132d. To the one hundred and thirty-second interrogatory he saith: Phineas Davis was killed on the Washington Branch of the railroad; Mr. Brown is in the shipping business and exchange; Mr. Woodville is, I think, a stock and exchange broker.

133d. To the one hundred and thirty-third interrogatory he saith: I continued to pursue my profession of a millwright and machinist since I left the service of the Baltimore and Ohio Railroad Company in eighteen hundred and thirty-four up to November, 1853. For a short time I was superintendent of a plaster mill, and am now engaged in building a very large flour mill.

134th. To the one hundred and thirty-fourth interrogatory he saith: I understood at one time that he went to drawing school—the time I cannot tell—but I believe it was since eighteen hundred and thirty.

135th. To the one hundred and thirty-fifth interrogatory he saith: I was the only man in the employment of the Company that I know of who could make a regular drawing to a scale, and also work by it.

136th. To the one hundred and thirty-sixth interrogatory he saith: It did extend through woods, and cord-wood was made available by it for the Baltimore market.

137th. To the one hundred and thirty-seventh interrogatory he saith: I think there must have been near a hundred; it was the

custom to number them. The first that were made were not numbered, and I do not know what time of the year we commenced numbering; the cars used on the road were numbered as we could get hold of them in repairing them from time to time.

138th. To the one hundred and thirty-eighth interrogatory he saith: I cannot say positively; but as far as my memory serves me, it was after some of them were put in operation in the fall of 1830.

139th. To the one hundred and thirty-ninth interrogatory, he saith: They were generally put together rough, firmly bolted, there was no planing or painting about them; such work was generally done outside of the shop. The trucks stood at the most convenient places to the shop; we had a temporary siding or track in front of the shop on which such work was generally done.

140th. To the one hundred and fortieth interrogatory, he saith: These reports have reference to new work done in the shops principally; what repairs and rough work that was done out of the shops was not generally reported. The principal reason why the wood cars are not named I suppose, and were not done in the shop, was, that the timber was long and unhandy, and it required but little time to prepare the cars.

141st. To the one hundred and forty-first interrogatory, he saith: These are copies of the pay rolls of those time, marked Defendant's Exhibit L; I have no copies of reports.

142d. To the one hundred and forty-second interrogatory, he saith: I have no drawings, but here is a model of her at that time, marked Defendant's Exhibit K.

144th. To the one hundred and forty-fourth interrogatory, he saith: My former answer to the 140th interrogatory fully answers this question.

145th. To the one hundred and forty-fifth interrogatory, he saith: It does contain the entry of the eight wheel trussels on bodies for conveying horses and carriages. It reads "Two trussels for the transportation of horses and carriages."

146th. To the one hundred and forty-sixth interrogatory, he saith: When I left in April or May, 1834, there were from twenty to twenty-five of the eight wheel wood and trussel cars, and four new eight wheel passenger cars, and one or two eight wheel cars made out of old bodies, for passengers, in use on the road.

The trussel and wood cars on the same principle and used up to the present day. These passenger cars were used several years, to my knowledge, after I left.

147th. To the one hundred and forty-seventh interrogatory, he saith: This is like the smoked drawing, it is a lithograph of it, marked "Defendant's Exhibit, No. 4," except it is not colored yellow as that drawing was. It does not represent the Columbus by the finish at the top at all, there was no such finish on the Columbus when first built. It does not represent the Columbus in placing two doors on one side. It does not represent the Columbus in the man-

ner of construction, as the uprights in the drawing pass up through the roof of the car, to support a wooden frame on top; the top rail of the body of the car shows a rail halved in the uprights, from the outside or let into the uprights from the outside. The uprights are further apart considerably than the Columbus was built, without the top finish and the running gears, it is a partial representation of the Columbus when first built.

148th. To the one hundred and forty-eighth interrogatory, he saith: This is a model of the Columbus at that time, marked Defenddant's Exhibit K.

149th. To the one hundred and forty-ninth interrogatory, he saith: It has not the same number of pieces in the frame. There were two intermediate pieces running lengthwise, dividing the bottom into three equal parts, on which the floor was fastened in the frame-work of the Columbus.

150th. To the one hundred and fiftieth interrogatory, he saith: This ground plan does not show any frame-work running lengthwise, and represents the floor, or a portion of the floor, running crosswise of the frame.

151st. To the one hundred and fifty-first interrogatory, he saith: If this is a top view of the bottom framing, the piece that runs across will represent the top framing of the car of the running gear, as the ring is shown on the top of that piece. It is impossible for me to determine here, what is intended to be represented by those two pieces, as it would require a man to be under the car, and look up at it, to put it in the position it is here.

152d. To the one hundred and fifty-second interrogatory, he saith: If this wide piece that extends across is intended to be the piece immediately connected with the body, it indicates the ring above the bolster, and on the side elevation view no rings are represented at all. The running gears represent a plain cross piece of the corresponding width of the widest piece represented on the ground plan; the short piece at a scale of three-quarters of an inch to the foot, shows a piece about four feet nine inches long, too short to go across the body or running gear either.

153d. To the one hundred and fifty-third interrogatory, he saith: It is impossible for me to tell, unless I knew what the pieces represented. If the longer and wider piece represents the middle cross piece of the truck, the other represents the bolster, the swivelling bolster. Then there is no cross timber represented, if that be the case, to fasten the circular piece to, and support the car on, that rests on the thorough brace.

154th. To the one hundred and fifty-fourth interrogatory, he saith: None, if I understand the drawing.

155th. To the one hundred and fifty-fifth interrogatory, he saith: It simply represents, here, a plain bolster, or bolsters fastened to the bottom sides of the body; the two lines, one on the end of the main cross piece of the truck, and the other on the bolster, indicate

the taper from the centre out to the end, and shows the distance they are apart at the end.

156th. To the one hundred and fifty-sixth interrogatory, he saith: The ring on the ground plan is represented between the two pieces of timber. If the plain bolster, represented under the body, in the elevation view, is nothing but a plain bolster, then there is no thorough brace bolster represented there at all in the elevation view.

157th. To the one hundred and fifty-seventh interrogatory, he saith: They would have to be in the full circle, and not as shown in defendant's Exhibit No. 4.

158th. To the one hundred and fifty-eighth interrogatory, he saith: They extend past, as shown in the model K.

159th. To the one hundred and fifty-ninth interrogatory, he saith: The openings in this exhibit are three feet and a half inch by two feet; and six of them on a side, as near as I can recollect; they were about two feet square, and nine of them I think in the Columbus.

160th. To the one hundred and sixtieth interrogatory, he saith: The size here is ten by twelve on "Exhibit No. 4." And eighteen lights exclusive of the doors; I think there was twenty-seven in the Columbus showed seven by nine, or eight by ten, I don't know which.

161st. To the one hundred and sixty-first interrogatory, he saith: The top rail here is about two and a fourth inches wide, the rail under the window is about three and a fourth in "Exhibit No. 4" and in the Columbus, the top rail that the roof rested on was from four to five inches wide, the rail under the sash was about an inch and a half or two inches.

162d. To the one hundred and sixty-second interrogatory, he saith: The top rail of the Columbus was made strong to support the roof, and any ordinary weight that might be necessarily placed upon it. In "Exhibit No. 4," there is no portion of the roof shown at all.

163d. To the one hundred and sixty-third interrogatory, he saith: The finish on the top of the body in the Exhibit, is entirely different from the finish of the Columbus at any time, it has no iron baggage rods on top or iron uprights.

164th. To the one hundred and sixty-fourth interrogatory, he saith: The perch here in "Exhibit No. 4" is represented, to be reduced from the front cross piece to half of its thickness, when it passes through the middle bolster or middle cross-piece of the truck, the top side of it is represented to be about an inch and three quarters below the upper side of the cross pieces, and if let in from the top of the middle cross piece, would cut it about half in two, there are no hounds represented in this drawing. The perch of the Columbus was continued the same size, the length of the frame notched down so as to show about two inches above the cross timbers and a roller inserted to come up about fair with the top of the perch, the roller operating on the ring in passing curves and switches, it had hounds firmly bolted on the frame.

165th. To the one hundred and sixty-fifth interrogatory, he saith: The side pieces on the Columbus were single pieces of timber with plain boxes. I do not know whether these are intended to represent a double side piece or a single one, in the "Exhibit No. 4," these are friction wheel boxes, I judge in the Exhibit, the side pieces must have been doubled, these boxes could not be applied to single side pieces, the boxes were intended to hold oil for the friction wheels to revolve in.

166th. To the one hundred and sixty-sixth interrogatory, he saith: Nothing that I think of, without a direct question to show some point.

To the cross interrogatories propounded to him on the part of the plaintiff he deposeth as follows:

X 1st. To the first cross interrogatory, he saith: Mr. Jonathan Knight was I believe chief engineer, who were his assistants when I was first employed I know not.

X 2d. To the second cross interrogatory, he saith: I was the only man that was a machinist by profession, and that had carried on the business regularly as a master workman. Ross Winans was employed, I believe, some time in 1831, but what his title was on the time he left I can't say.

X 3d. To the third cross-interrogatory, he saith: I knew nothing of him personally when I was first employed by the Company. Some time in 1830, I became acquainted with him, he was then engaged in trying to get up and perfect his memorable friction wheel invention so called; afterwards he was engaged in getting up machinery for the plans, and trying some experiments on the road with friction wheel cars, &c. &c.

X 4th. To fourth cross-interrogatory, he saith: Ross Winans had no authority over me during my stay in the employ of said Company; I received no orders from him directly or indirectly, to my knowledge.

X 5th. To the fifth cross-interrogatory, he saith: I might have talked with Ross Winans, and passed opinions and ideas relative to the work, as I did with others, but never took directions from him, and never followed his opinions.

X 6th. To the sixth cross-interrogatory, he saith: I do not recollect of ever seeing a drawing that was made by him, during my stay with the Company.

X 7th. To the seventh cross-interrogatory, he saith: The first I knew of John Elgar as being in the Company's service, was putting down the first turn-out, in the Mount Clare Depot, under Major Whistler; I furnished the hands to do the mechanical part, and paid them; made the circular pattern to form the curve from the switch on; John Elgar got more instructions from me by far, than I received from him; we passed opinions and ideas; as to drawings, he knew nothing about making them.

X 8th. To the eighth cross-interrogatory, he saith: Mr. Winans was engaged in making some experiments that came under my ob-

servation in relation to the power required to move cars through curves and switches; it was to ascertain the difference between Winans' friction wheel cars, and common box cars mainly. I think Ross Winans experimented on Stimpson's patent curve for passing the corners of streets, also on the Company's ground near the shops.

X 9th. To the ninth cross-interrogatory, he saith: My duties were to do all, and the best I could for the Company, as far as I was capable, planning, drawing, and executing, purchasing materials, and employing hands; keeping time, and paying off.

X 10th. To the tenth cross-interrogatory, he saith: There was very little done in fixing forms and proportions when I first went to work, such forms and proportions were decided upon as the necessity of the case required.

X 11th. To the eleventh cross-interrogatory, he saith: There was no specified size, they were made to suit the commodities to be transported on the road, and varied from seven to nine feet in the platforms.

X 12th. To the twelfth cross-interrogatory, he saith: I think thirty inches was the diameter of the tread, the distance between the axles was varied, as stated above in the trucks and bodies. It varied from about three feet three inches, to four feet six inches to suit the body.

X 13th. To the thirteenth cross-interrogatory, he saith; That would depend on the length of the body or truck in part, but in no case were they placed more than from eighteen inches to two feet from flange to flange.

X 14th. To the fourteenth cross-interrogatory, he saith: In some cases it was.

X 15th. To the fifteenth cross-interrogatory, he saith: They varied as well as other cars; we never called the running gears of a passenger car a platform.

X 16th. To the sixteenth cross-interrogatory, he saith: There was some used as soon as the road was opened, and the distance of the axles apart varied.

X 17th. To the seventeenth cross-interrogatory, he saith: Say half a dozen perhaps in 1830 and 1831.

X 18th. To the eighteenth cross-interrogatory, he saith: From thirty-six to fifty inches, I suppose, would include all.

X 19th. To the nineteenth cross-interrogatory, he saith: As many as could crowd in was sometimes a load, and then as many as they could obtain, say from five to twenty persons according to sizes.

X 20th. To the twentieth cross-interrogatory, he saith: I cannot state particularly.

X 21st. To the twenty-first cross-interrogatory, he saith: There were some few.

X 22d. To the twenty-second cross-interrogatory, he saith: I had the direction myself.

X 23d. To the twenty-third cross-interrogatory, he saith: Trucks were built and used for this purpose in November, 1830.

X 24th. To the twenty-fourth cross-interrogatory, he saith: The necessity grew out of the difficulty in hauling long string pieces, and I was asked whether or not I could make an improvement by one of the drivers or agents for such transportation (as I had the general order from the President to make any improvement, I had no person higher to go to). I went to work and got up the bolsters and prepared the cars without further consultation or advice, no drawing being required. Mr. George Brown superintended at the time. The success of this timber car in the spring and summer of 1830, was sufficient to build the eight wheel cars from in the fall of that year.

X 25th. To the twenty-fifth cross-interrogatory, he saith: Michael M. Glenn worked some time, and Cromwell, also; Reynolds and Terry worked a very short time. Cromwell was a coach-body builder; Glenn worked at anything about; Reynolds and Terry were jobbing about.

X 26th. To the twenty-sixth cross-interrogatory, he saith: He did not. He was placed at Mount Clare as a kind of underhand at repairs.

X 27th. To the twenty-seventh cross-interrogatory, he saith: In November and December, 1830, there were eight-wheel cars built for the transportation of wood, also trussel cars for the transportation of light articles, and used for horses and carriages, how many I cannot tell. I suppose eight or ten in all. Mr. Woodville generally gave the orders for cars, and what was to be conveyed, and how many of each; the planning and construction was generally left to me. There is the same description of cars used to the present day.

X 28th. To the twenty-eighth cross-interrogatory, he saith: There were some built permanently and intended for transportation cars in eighteen hundred and thirty, how many I do not know, I think some eight or ten prior to March, 1831. They were built in the then usual form, putting two cross pieces in centre of frame, and perch piece to draw by: there were no springs used prior to March, 1831. The axles were about three feet six inches from centre to centre, and the cars are fairly represented by the Models E and F, the scale being one inch to the foot.

X 29th. To the twenty-ninth cross-interrogatory, he saith: The trucks that were first used for hauling lumber in the summer of 1830, were taken from the road, covered with two inch boards, others were built specially in the following fall and winter to operate as eight wheeled cars, the platform was to give strength, as a bolster making a strong frame.

X 30th. To the thirtieth cross-interrogatory, he saith: I do not know that any were made temporary, they were made to do all that was required, and last as long as possible; there was a temporary piece placed as a coupling sometimes, when hauling long timber, as

there was no connection when the timber was off, but the wood and trussel cars required no such connection, they had permanent bodies.

There was invariably an iron plate fastened to the centre of the truck, and a corresponding plate on the upper bolster, and an iron pin to pass down through, which formed a durable fixture, and also a proper connection to the running part, which never failed to my knowledge, to perform all that was intended by it.

X 31st. To the thirty-first cross-interrogatory, he saith: Eight or ten were. Mr. Woodville had the management. The first in November, 1830, others as fast as we could make them. They were used many years, were in use in 1834, and similar ones are used now.

X 32d. To the thirty-second cross-interrogatory, he saith: Some of the wood car bodies were made with platforms, and some without; the trussel car without platforms, they had a regular trussel body with a floor in it, both eight-wheeled cars.

X 33d. To the thirty-third cross-interrogatory, he saith: The first was used in December, 1830, built for permanent use, and one of them carried the horses and carriage of John Quincy Adams to the Relay House, about the middle of said month.

X 34th. To the thirty-fourth cross-interrogatory, he saith: The road was opened, I think, in May, 1830, to Ellicott's Mills, the distance said to be fourteen miles.

X 35th. To the thirty-fifth cross-interrogatory, he saith: Nothing could have been transported beyond Ellicott's Mills, prior to the road being opened beyond it.

X 36th. To the thirty-sixth cross-interrogatory, he saith: The difference in the mechanical effect on curves would vary very little in cars built with flanges two to twelve inches apart.

X 37th. To the thirty-seventh cross-interrogatory, he saith: There is very little doubt in my mind, that experiments were made, and some came under my notice, and it is very possible Ross Winans was aiding, for he required all the information he could possibly get, for he was undoubtedly very ignorant practically of railroad machinery at that period.

X 38th. To the thirty-eighth cross-interrogatory, he saith: There was an effort made to deprive Mr. Stimpson of his patent curve for turning the corners of streets, and, I think, some of my hands laid down the curve, but who was at the head of it, I cannot say, very probably the assistant engineers, as you have been pleased to call them. I think it was more to ascertain how short a curve could be worked. Stimpson, I believed, sued the company.

X 39th. To the thirty-ninth cross-interrogatory, he saith: I have answered this question before, it was confined to building and repairing cars.

X 40th. To the fortieth cross-interrogatory, he saith: No more than furnish hands to do the necessary work.

X 41st. To the forty-first interrogatory, he saith: It was not my desire to use Mr. Stimpson's invention without his consent, and with

all the experiments made there was very little accomplished, if my memory serves me.

X 42d. To the forty-second cross-interrogatory, he saith: I made the drawings of the running gears of the Columbus, ground plan and elevation view 1½ inch to the foot on a board.

X 43d. To the forty-third cross-interrogatory, he saith: I believe the drawing of a body or the outlines of an imperfect sketch was given to me by Mr. George Brown, and the running gear was planned and drawn by me afterwards. I should not at that time have known who to have gone to for instructions. For my position as a machinist and wood workman gave me more facilities to acquire knowledge and reduce it to practice than any man about the concern, not excepting the assistants to the engineer.

X 44th. To the forty-fourth cross-interrogatory, he saith: I think about twelve inches.

X 45th. To the forty fifth cross-interrogatory, he saith: The difference in the distance from three to twelve inches did not amount to anything practically.

X 46th. To the forty-sixth cross-interrogatory, he saith: There were plain boxes placed on her first.

X 47th. To the forty-seventh cross-interrogatory, he saith: Winans' friction wheels admitted of distance on account of the vibratory motion.

X 48th. To the forty-eighth cross-interrogatory, he says: If I answered the question in the way stated I was in error, not properly understanding the question or some other cause. I think I explained that the first had plain boxes in some part of that deposition.

X 49th. To the forty-ninth cross-interrogatory, he saith: I don't recollect the precise question and answer; I did testify that she first had plain boxes.

X 50th. To the fiftieth cross-interrogatory, he saith: The answer would have been correct, I suppose I did so state.

X 51st. to the fifty-first cross-interrogatory, he saith: The answer referred to in this cross-interrogatory I do not recollect to have given. I have been examined so often and to such a great length, that I have no distinct recollection that I did state what is therein set forth as my answer; I think I did not give it as there written, it is inexplicit in not stating the order of changes made in the boxes and trucks. The question as to this was not then asked me.

X 52d. To the fifty-second cross-interrogatory, he saith: I never thought they would be durable.

X 53d. To the fifty-third cross-interrogatory, he saith: The answer may be correct as stated.

X 54th. To the fifty-fourth cross-interrogatory, he saith: The answer given may be correct.

X 55th. To the fifty-fifth cross-interrogatory, he saith: The answer may be correct.

X 56th. To the fifty-sixth cross-interrogatory, he saith: That answer may have been given.

X 57th. To the fifty-seventh cross-interrogatory, he saith: The friction wheels were put on after she was built some time, and there is an error in the answer as stated in the question. I cannot say that I expressed it with that meaning.

X 58th. To the fifty-eighth cross-interrogatory he saith: I cannot state the precise answer I then gave.

X 59th. To the fifth-ninth cross-interrogatory he saith: The answer, as stated in the interrogatory, I think correct.

X 60th. To the sixtieth cross-interrogatory he saith: I did.

X 61st. To the sixty-first cross-interrogatory he saith: The drawing on the board was planed out and the board used for other drawings. The skeleton frame of the body, without any running gear upon it, was laid in Cromwell's chest; I think it was destroyed; I have never seen it since.

X 62d. To the sixty-second cross-interrogatory he saith: I do not recollect that I ever stated that a rod was used as a coupling on the eight-wheel wood or trussel cars. A temporary piece of board was used on the wood cars and none on the trussel cars.

X 63d. To the sixty-third cross-interrogatory he saith: I think I did.

X 64th. To the sixth-fourth cross-interrogatory he saith: Not if I know what an eight-wheel car is; the wood and trussel cars were as permanent as hers.

X 65th. To the sixty-fifth cross-interrogatory he saith: Not so; the wood and trussel cars had bodies before the Columbus.

X 66th. To the sixty-sixth cross-interrogatory he saith: I do not recollect to have stated the year, as given in this interrogatory. If I did I was wrong, and did not recollect the year as expressed. I do not recollect ever to have stated a bar was used in any case to any car with eight wheels.

X 67th. To the sixty-seventh cross-interrogatory he saith: I do not recollect to have received any instructions from Ross Winans at any time. I think a man, by the name of George Bartol, who was principal coach-body builder at Charles Street shops, suggested and made the alterations of the body of the Columbus—that is, the wood work; the thorough brace was in all the passenger cars; I took it from them.

X 68th. To the sixty-eighth cross-interrogatory he saith: The car Columbus was always successful, when in proper order, after she was altered in the spring of 1832. I speak from seeing her used by the Company on the road.

X 69th. To the sixth-ninth cross-interrogatory he saith: The Columbus, Winchester, Dromedary, and Comet, and the wood and trussel cars were continued in use in that way after 1834. I do not know how long they were built in 1830. The three passenger cars first named were built by the men under my charge in 1831, 1832,

1833. Forrest made the springs for the Comet under Winans' directions.

X 70th. To the seventieth cross-interrogatory he saith: There were three such passenger cars built, but not for experiment, after the Columbus. They were called the Winchester, Dromedary, and Comet. The Winchester 1st, Dromedary 2d, Comet 3d. They were planned and constructed under my directions, but Winans gave directions as to the springs under the Comet. The Winchester had three bodies in the form of coach bodies resting on, and fastened to two long pieces resting on and fastened to the swivelling bolsters. The Comet had five bodies, made in the form of coach bodies, shorter than the Winchester; the framing hung down between the trucks; three of the bodies were depressed, and one at each end elevated. The Dromedary similar to the Comet, but with one single body. I can't tell the number and size of the windows now, nor the number of panes of glass on each side. The trucks of the Winchester were similar to the Columbus, but with a spring to each wheel. The Comet had a piece of timber firmly fixed to two heavy springs; the boxes for the axles or bearings fastened to each end of the spring. The Dromedary was similar to the Winchester. I can't tell now the exact distance between the wheels of each, but think the Comet's wheels were the nearest of the three; all were connected by a king bolt; the bolsters bore on the centres; all drawn by the truck. They were altered, I was told, after I left the Company. I refer to the drawings annexed marked "Car Winchester," "Car Dromedary," "Car Comet," representing them as first built.

X 71st. To the seventy-first cross-interrogatory, he saith: I did.

X 72d. To the seventy-second cross-interrogatory, he saith: I don't think I gave that answer.

X 73d. To the seventy-third cross-interrogatory, he saith: I did.

X 74th. To the seventy-fourth cross-interrogatory, he saith: I did.

X 75th. To the seventy-fifth cross-interrogatory, he saith: I did.

X 76th. To the seventy-sixth cross-interrogatory, he saith: I did.

X 77th. To the seventy-seventh cross-interrogatory, he saith: I did.

X 78th. To the seventy-eighth cross-interrogatory, he saith: I did.

X 79th. To the seventy-ninth cross-interrogatory, he saith: I did.

X 80th. To the eightieth cross-interrogatory, he saith: I did.

X 81st. To the eighty-first cross-interrogatory, he saith: I did.

X 82d. To the eighty-second cross-interrogatory, he saith: I did.

X 83d. To the eighty-third cross-interrogatory, he saith: I did.

X 84th. To the eighty-fourth cross-interrogatory, he saith: I did.

X 85th To the eighty-fifth cross-interrogatory, he saith: I did.

X 86th. To the eighty-sixth cross-interrogatory, he saith: I did.

X 87th. To the eighty-seventh cross-interrogatory, he saith: I did.

X 88th. To the eighty-eighth cross-interrogatory, he saith: I did.

X 89th. To the eighty-ninth cross-interrogatory, he saith: I did.

X 90th. To the ninetieth cross-interrogatory, he saith: I did.

X 91st. To the ninety-first cross-interrogatory, he saith: I did.

X 92d. To the ninety-second cross-interrogatory, he saith: I did.

X 93d. To the ninety-third cross-interrogatory, he saith: I did.

X 94th. To the ninety-fourth cross-interrogatory, he saith: I did.

X 95th. To the ninety-fifth cross-interrogatory, he saith: I do not know that they were numbered at the time the first eight wheel cars were built.

X 96th. To the ninety-sixth cross-interrogatory, he saith: There were a number used through the winter. How many by first of April, I cannot say. I suppose from 10 to 20. Mr. Woodville had the management of the transportation department, and generally specified the number of such cars as were required. I don't know what numbers were on them.

X 97th. To the ninety-seventh cross-interrogatory he saith: The car that conveyed Ex-president J. Q. Adams' horses and carriages to the Relay House was an eight-wheeled car, built for the transportation of light articles, such as hay, straw, empty barrels, &c., and was also suitable for live stock; a permanent structure. There were no horses or carriages transported to my knowledge prior to December, 1830.

X 98th. To the ninety-eighth cross-interrogatory he saith: I have made the drawings and models of the eight-wheel cars, gave instructions to my men to do the work, and done some myself. Some were made in 1851 or 1852, and some last September some. The Comet, Winchester and Dromedary, this December, I was requested to prepare them to submit in my testimony.

X 99th. To the ninety-ninth cross-interrogatory he saith: To the first and second branch of this cross-interrogatory I say no. The interrogatories were shown to me at the time I appeared to testify before the commissioner by the commissioner himself.

X 100th. To the one hundredth cross-interrogatory he saith: At the time of the commissioner's reading to me the direct interrogatories, when I was before him for the purpose of giving my deposition in this case. It struck me forcibly that the questions, if not identically the same, were the same in substance of those I had answered in the case of Winans against the New York and Harlem Railroad Company; and upon ascertaining that the Commissioner had a copy of the answers I then gave, and for the purpose of facilitating the execution of this commission, I adopted the answers before referred to, altering them in some particulars so as to be more explicit, and I now declare that, independent of seeing the copy of my answers, the facts I have herein testified to are true.

X 101st. To the one hundred and first cross-interrogatory he saith: None but the commissioner and myself.

X 102d. To the one hundred and second cross-interrogatory he saith: I refer to my answer to the one hundredth cross-interrogatory.

X 103d. To the one hundred and third cross-interrogatory he saith: I do not.

To the additional interrogatories propounded to him in connection with John M. Eichelberger, Jacob Rupp and Leonard Forrest, he deposeth as follows:—

1st additional. To the first additional interrogatory he saith: The Columbus, in 1831. The Winchester and Dromedary, in the latter part of 1832, or early part of 1833; the Comet, in the early part of 1834. The Exhibits hereto annexed, and before referred to by me, marked "Car Winchester," "Car Dromedary," and "Car Comet," are correct representations of them as they were when first built. I have described the Columbus in my answer to the 40th direct interrogatory, and the Winchester, Dromedary and Comet in my answer to the 70th cross-interrogatory.

2d additional. To the second additional interrogatory he saith: They were used for carrying passengers for hire. The Columbus was put on the road I think in July, 1831. I can't say at what precise time the others were put on the road, but they were all in use when I left the road in 1834.

3d additional. To the third additional interrogatory he saith: I do not.

To the additional cross-interrogatories he deposeth as follows:—

X 1 additional. To the first additional cross-interrogatory, he saith: They were all made under my directions; I was requested to prepare them.

X 2d additional. To the second additional cross-interrogatory, he saith: I had nothing to do personally with receiving the fare or pay.

X 3d additional. To the third additional cross-interrogatory, he saith: I do not.

CONDUCE GATCH.

Examination taken, reduced to writing, and by the witness subscribed and sworn to, this 2d day of January, 1856, before

JOHN HANAN,
U. S. Commissioner.

(For drawing, see page 322.)

Defendants' Exhibit G.

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and the New York and Erie Railroad Company, defendants, this drawing marked "Defendants' exhibit G," was produced and shown to Conduce Gatch, John M.

Eichelberger, and Jacob Rupp, and by them at their examinations before me deposed to.

JOHN HANAN,
Commissioner.

CONDUCE GATCH,
JOHN M. EICHELBERGER,
JACOB RUPP.

(For drawing, see page 323.)

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and The New York and Erie Railroad Company, defendants, this drawing marked "Car Winchester," was produced and shown to Edward May, Leonard Forrest, Conduce Gatch, Jacob Rupp, and Edward Gillingham, and by them deposed to at their examinations for me.

JOHN HANAN,
Commissioner.

EDWARD MAY,
his
LEONARD + FORREST,
mark.
CONDUCE GATCH,
JACOB RUPP,
EDW. GILLINGHAM.

(For drawing, see page 324.)

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and The New York and Erie Railroad Company, defendants, this drawing marked "Car Dromedary," was produced and shown to Leonard Forrest, Edward May, Conduce Gatch, Jacob Rupp, Edward Gillingham, and by them deposed to at the time of their examinations before me.

JOHN HANAN,
Commissioner.

his
LEONARD + FORREST,
mark.
EDWARD MAY,
CONDUCE GATCH,
JACOB RUPP,
EDWARD GILLINGHAM.

(For drawing see page 325.)

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and the New York and Erie Railroad Company, defendants, this drawing, marked "Car Comet," was produced and shown to Conduce Gatch, Edward May, Leonard Forrest, Jacob Rupp, and Edward Gillingham, and by them deposed to their examinations before me,

JOHN HANAN,
Commisioner.

EDWARD MAY,
his
LEONARD × FORREST,
mark.
CONDUCE GATCH,
JACOB RUPP,
EDWARD GILLINGHAM.

(For drawing see page 326.)

"*Defendants' Exhibit, No.* 4."

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and the New York and Erie Railroad, defendants. This drawing, marked Defendants' "Exhibit No. 4," was produced and shown to Conduce Gatch, Leonard Forrest, and John M. Eichelberger, and by them deposed to at the time of their examinations before me,

JOHN HANAN,
Commissioner.

his
LEONARD + FORREST,
mark.
CONDUCE GATCH,
JOHN M. EICHELBERGER.

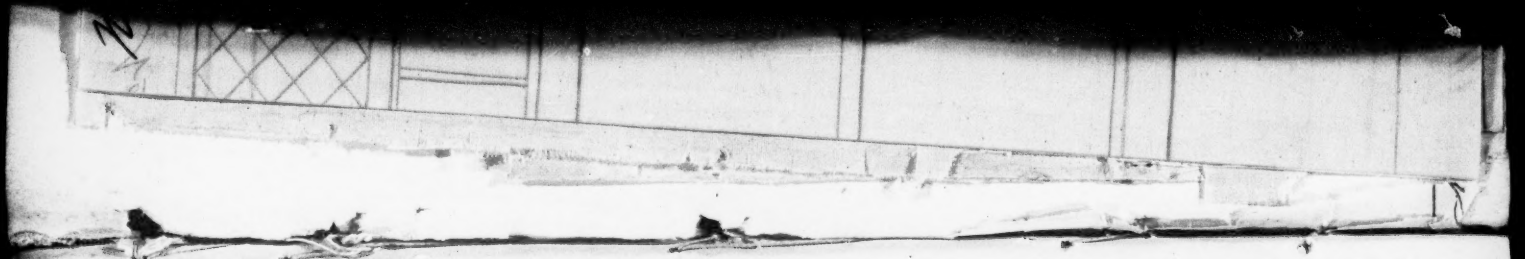
(For drawing see page 327.)

"*Defendants' Exhibit H.*"

At the execution of a commission for the examination of witnesses between Ross Winans, and the New York and Erie Railroad Company, defendants, this drawing, marked "Defendants' Exhibit H," was *was* produced and shown to Conduce Gatch, and him deposed to at the time of his examination before me.

JOHN HANAN,
U. S. Commiss.

CONDUCE GATCH.



(For drawing see page 328.)

"*Defendants' Exhibit J.*"

At the execution of a commission for the examination of witnesses between Ross Winans, plaintiff, and the New York and Erie Railroad Company are defendants, this drawing, marked "Defendants' Exhibit J," was produced and shown to Conduce Gatch and Jacob Rupp, and by them deposed to at the time of their examination before me.

JOHN HANAN,
U. S. Comm'r.

CONDUCE GATCH,
JACOB RUPP.

Exhibit L.

At the execution of a commission for the examination of witnesses between Ross Winans and the New York and Erie Railroad Company, defendants, this drawing, marked Exhibit L, was produced and shown to Conduce Gatch, and by him deposed to at the time of his examination before me.

JOHN HANAN,
Commissioner.

CONDUCE GATCH.

(E. GATCH.) (VOUCHER No. 32.) (A.)

We, the undersigned, do acknowledge to have received of C. Gatch, master carpenter, the amount hereunto set opposite our names, respectively, in full payment of our services for the time herein specified, while employed under his direction on duties relating to the construction of Wagons, &c., for the Baltimore and Ohio Railroad Company, November 30th, 1830.

No.	Names.	Occupation, or nature of expenditure.	No. of voucher.	Term of service.	No. of days.	Rate per day.	Aggregate.	Signers' names.	Witnesses' names, &c.
1	C. Gatch	Master Carpenter		From Nov. 1, to	26	$2 00	$52 00	Canduce Gatch.	
2	M Glenn	Carpenter		Nov. 30.	25¾	1 25	32 18¾	M. Glenn	
3	J. Rupp	do		do	25	1 25	31 25	J. ⋈ Rupp	M. Glenn.
4	F. A. Gatch	do		do	25½	1 25	31 87½	F. A. Gatch	
5	W. O. Frost	do		do	25½	1 25	31 87½	W. O. Frost	
6	E. Eichelberger	do		do	25	1 25	31 25	E. Eichelberger.	
7	J. Eichelberger	Painter		do	23	1 50	34 50	J. Eichelberger.	
8	O. Cromwell	Coachmaker		do	25¾	1 50	38 62½	O. Cromwell	
9	P. Fullerton	Laborer		do	26	75	19 50	P. ⋈ Fullerton	W. O. Frost
10	L. Forrest	Smith		do	26	1 42	36 92	L. ⋈ Forrest.	F. A. Gatch
11	C. Parraway	Helper		do	26	75	19 50	C. ⋈ Parraway	
12	Dugan & Robb	Sawyers (each)		Nov. 2 to Nov. 4.	1¾	1 50	* 5 62½	Dungan & Robb.	
13	H. Reynolds	Carpenter		do 16 to do 30.	13	1 25	16 25	Henry Reynolds	
	Jenkins & Stimple	Saddlery, &c.	No. 1 & 2				6 94		
	Jno. D. Deaver	Turning	No. 3				4 93¾		
	Browning, Gilling'm & Jessop	Hardware, oil & paints.	No. 4 & 5				36 98		
							$430 21½		
		* Less error $5 62½	instead	of $5.25.			37½		
							$429 84		

I certify that the above account, amounting to $429.84½, is correct, and that the articles and expenditures therein charged, were procured and applied in aid of the construction of the Wagons for the Baltimore and Ohio Railroad Company.
November 30th, 1830.

C. GATCH.

Baltimore, December 1st, 1830, Received of George Brown, Treasurer, the amount of the above account.
I believe the above is correct.

C. GATCH.
G. BROWN, *Treasurer.*

Audited. Four hundred and twenty-nine dollars and eighty-four cents ($429.84).
(Approved) P. E. THOMAS, P.

W. WOODVILLE, *Auditor.*

A List of Work done in November, 1830.

To making two new plain box wagons for Hinks, for Stone, No. 36 and 37.
" New sides and brakes to Constellation.
" Making one new coal car on Winans' plan.
" Making one plain box wagon for Hinks, No. 38.
" Altering one old wagon.
" Altering and fitting up with sash, doors, and springs, Col. Long's wagon.
" Making two new wagons for scrap-iron, &c., Winans' plan.
" Fitting up one old frame for low wheels.
" Making two new plain wagons, Nos. 39 and 40.
" Fitting up old frame for low wheels.
" Making seven pair new shafts, and repairing 20 old do., some both shafts, others with one.
" Smiths' work for the above shafts and wagons.

Winans.	Stone.
1	2
2	1
	2
3	5

(C. GATCH.) (VOUCHER No. 58.) (B.)

We, the undersigned, do acknowledge to have received of C. Gatch, master carpenter, the amount hereunto set opposite our names, respectively, in full payment for our services for the time herein specified, while employed under his direction on duties relating to the construction of Wagons, &c., for the Baltimore and Ohio Railroad Company. December, 1830.

No.	Names.	Occupation, or nature of expenditure.	No. of voucher.	Term of service.	No. of days.	Rate per day.	Aggregate.	Signers' names.	Witnesses' names, &c.
1	C. Gatch	Master Carpenter		From Dec. 1, to	26	$2 00	$52 00	C. Gatch	
2	M. Glenn	Carpenter		Dec. 31.	13	1 25	16 25	M. Glenn	
3	J. Rupp	do		do	26	1 25	32 50	J. ✕ Rupp	F. A. Gatch
4	F. A. Gatch	do		do	16	1 25	20 00	F. A. Gatch	
5	W. O. Frost	do		do	26	1 25	32 50	W. O. Frost	
6	E. Eichelberger	do		do	26	1 25	32 50	E. Eichelberger.	
7	J. Eichelberger	Painter		do	16	1 50	24 00	J. Eichelberger.	
8	O. Cromwell	Coachmaker		do	26	1 50	39 00	O. Cromwell	
9	H. Reynolds	Carpenter		do	26	1 25	32 50	Henry Reynolds	
10	L. Forrest	Smith		do	26	1 42	26 92	L. ✕ Forrest.	O. Cromwell
11	C. Parraway	Helper		do	26	75	19 50	C. ✕ Parraw'y	
12	P. Fullerton	Laborer		do	26	75	19 50	P. Fullerton	
13	D. McAvoy	Drayman	1				6 91½		
14	R. Greenough	Stone, window, sash & glass	2				4 00		
15	Deaver, Tibles & Jenkins	Turn'g, leath'r, nuts, &c.	3				7 75		
16	Wm. S. Browning	Hard're, glass, oil, paints	4				19 16		
17	Gillingham & Jessop	Hardware	5				21 91		
							$416 90½		

I certify that the above account, amounting to $416.90½ is correct, and that the articles and items therein charged, were procured and applied in aid of the construction of the Wagon for the Baltimore and Ohio Railroad Company, December 31, 1830. C. GATCH, M. C.

Amount	$416 90½
Error in No. 1	10
	$416 80½

Baltimore, 1st January, 1831, Received of Geo. Brown, Treasurer, the amount of the above account. C. GATCH.

I believe the above is correct.
Audited. Four hundred and sixteen dollars and eighty and a half cents ($416.80½).
(Approved.) P. E. THOMAS, P.

G. BROWN, *Treasurer*
W. WOODVILLE, *Auditor.*
JOHN N. BROWN.

Work done in December, 1830.

Two plain box wagons, Nos. 41 and 42.
Two trussels for the transportation of horses and carriages.
One baggage wagon.
One plain box wagon, No. 43.
To fitting up Col. Long's wagon with springs, glass, &c.
To making 160 lights sash for shop.
To making 4 plain box wagons, Nos. 44, 45, 46, and 47.
To making new sides for coach, with brakes, complete.
One new pair of shafts; 13 pair repaired.
Smith work for the above; painting.

(C. GATCH.) (VOUCHER No. 3.) (C.)

We, the undersigned, do acknowledge to have received of C. Gatch, master carpenter, the amount hereunto set opposite our names, respectively, in full payment of our services for the time herein specified, while employed under his direction on duties relating to the construction of Wagons, &c., for the Baltimore and Ohio Railroad Company, January, 1831.

No.	Names.	Occupation, or nature of expenditure.	No. of voucher.	Commence't & expiration of service.	No. of days.	Rate per day.	Aggregate.	Signers' names.	Witnesses' names, &c.
1	C. Gatch	Master Carpenter		Jan. 1 to 31, inclu.	26	$2 00	$52 00	C. Gatch, M. C..	
2	M. Glenn	Carpenter			25½	1 25	31 87½	M. Glenn	
3	J. Rupp	do			26	1 25	32 50	J. ✕ Rupp	M. Glenn.
4	F. A. Gatch	do			21¼	1 25	26 56¼	F. A. Gatch	
5	W. O. Frost	do			25½	1 25	31 87½	W. O. Frost	
6	E. Eichelberger	do			26	1 25	32 50	E. Eichelberger.	
7	J. Eichelberger	Painter			10½	1 50	15 75	J. Eichelberger.	
8	O. Cromwell	Coachmaker			12½	1 50	18 75	O. Cromwell	
9	H. Reynolds	Carpenter			25½	1 25	31 87	Henry Reynolds	
10	R. Aler	do			24	1 25	30 00	Reuben Aler	
11	L. Forrest	Smith			26	1 42	36 92	L. ✕ Forrest	R. Aler.
12	P. Fullerton	Laborer			26	75	19 50	P. Fullerton	
13	Robb & Co.	Sawyers, 15 days each.			30	1 50	45 00	A. Robb & Co..	
14	C. Parraway	Helper to smith			26	75	19 50	C. ✕ Parraway.	R. Aler.
	McAvoy	Drayman	See re-	ceipt in pass book.			14 68¾		
	Wm. S. Browning	Oils, paints & hardware	1				20 07	Wm.S.Browning	
	Wm. Gillingham & Ensey	Hooks, rivets & brooms	2 & 3				4 05		
	Gillingham & Jessop	Hardware	4				15 98½		
							$479 40		

I certify that the above account, amounting to $479.40, is correct, and that the above mentioned items therein charged, were procured and applied in aid of the construction and repairing of cars, &c., for the Baltimore and Ohio Railroad Co., January, 1831. CANDUCE GATCH.

Baltimore, Feb. 1st, 1844. Received of Geo. Brown, Treasurer, the amount of the above account. CANDUCE GATCH.

I believe the above to be correct. G. BROWN, *Treasurer.*

Approved, P. E. THOMAS.

Audited. Four hundred and seventy-nine dollars and forty cents ($479.40).

W. WOODVILLE, *Auditor.*

JOHN N. BROWN.

A list of Work done at the Depot on Pratt Street, throughout January, 1831.

To new sides on coach Baltimore.
" " " Constitution.
" two new Winans' cars for coal, &c.
" new sides on Maryland.
" two new Winans' cars for coal, &c.
" new sides on house car.
" one new snow car and repairing.
" three new common cars for stone and iron.
" one new Winan wagon.
" smith work.
" two plain box wagons.
" painting, &c.

CANDUCE GATCH, M. C.

(C. GATCH) VOUCHER No. 31. (D.)

We, the undersigned, do acknowledge to have received, of C. Gatch, master carpenter, the amount hereunto set opposite our names, respectively, in full payment of our service for the time herein specified, while employed under his directions, on duties relating to the construction of wagons, &c., for the Baltimore and Ohio Railroad Company, February 28th, 1831.

No.	Names.	Occupation, or nature of expenditure.	No. of voucher.	Commence't & expiration of service.	No. of days.	Rate per day.	Aggregate.	Signers' names.	Witnesses' names, &c.
1	C. Gatch	Master Carpenter		Feb. 1st, to 28th.	24	$2 00	$48 00	C. Gatch, M. C.	
2	M. Glenn	Carpenter		do do	24	1 25	30 00	M. Glenn	
3	J. Rupp	do		do do	24	1 25	30 00	J. ⋈ Rupp	M. Glenn.
4	F. A. Gatch	do		do do	20½	1 25	25 62½	F. A. Gatch	
5	W. O. Frost	do		do do	24	1 25	30 00	W. O. Frost	
6	E. Eichelberger	do		do do	24	1 25	30 00	E. Eichelberger.	
7	J. Eichelberger	Painter		do do	14	1 50	21 00	J. Eichelberger.	
8	O. Cromwell	Coachmaker		do do	23	1 50	34 50	O. Cromwell.	
9	H. Reynolds	Carpenter		do do	24	1 25	30 00	H. Reynolds	
10	R. Aler	do		do do	24	1 25	30 00	Reuben Aler	
11	L. Forrest	Smith		do do	24	1 42	34 08	L. ⋈ Forrest	R. Aler.
12	P. Fullerton	Laborer		do do	24	0 75	18 00	P. Fullerton	
13	Robb & Co.	Sawyers, two each			16	1 50	48 00	A. Robb & Co.	
14	C. Parraway	Helper to smith			23¾	0 75	17 81½	C. ⋈ Parraway.	R. Aler.
	M. Drake and J. Ready	Wood-cutters & insp'tn.	1 & 2				1 52		
	Daniel McEvoy	Hauling	3				15 31¼		
	Wm. S. Browning	Glass, oil, paints, &c.	4				11 30½	Wm. S. Brown'g.	
	Gillingham & Jessop	Hardware, &c.	5				17 61		
							$472 76½		

I certify that the above account, amounting to $472.76½, is correct, and that the above articles, items therein charged, were procured and applied in aid of construction and repairs of wagons, &c., for the Baltimore and Ohio Railroad Co., February 28, 1831. C. GATCH, M. C.

I believe the above is correct. G. BROWN, *Treasurer.*

Approved, P. E. THOMAS, P.

Baltimore, March 1st, 1831. Received of George Brown, Treasurer, the amount of the above account. CANDUCE GATCH.

Audited. Four hundred and seventy-two dollars seventy-six and a half cents ($472.76½).

W. WOODVILLE, *Auditor.* J. N. BROWN.

Amount of Work done February, 1831, *at the B. & O. R. R. Company's shops.*

5th. One new Winan wagon for coal.
11th. New sides on Ohio coach.
12th. Four new Winan wagons for coal and flour.
15th. One new Winan wagon for " "
28th. New sides on Chesapeake coach.
Coachmaking, smithing, &c.

CANDUCE GATCH, M. C.

(C. GATCH.) (VOUCHER No. 39.) (E.)

We, the undersigned, do acknowledge to have received of C. Gatch, master carpenter, the amounts hereunto set opposite our names, respectively, in full payment of our services for the time herein specified, while employed under his direction on duties relating to the construction of wagons, &c., for the Baltimore and Ohio Railroad Company.

No.	Names.	Occupation or nature of expenditure.	No. of vouchers.	Terms of service	No. of days.	Rate per day.	Aggregate.	Signers' names.	Witnesses' names, &c.
1	C. Gatch	Master Carpenter		From 1st March to	27	$2 00	$54 00	C. Gatch, M. C.	
2	J. Rupp	Carpenter		31 March.	26	1 25	32 50	J. ⋈ Rupp	M. Glenn.
3	F. A. Gatch	do		do	18½	1 25*	23 25	F. A. Gatch	23 12
4	W. O. Frost	do		do	25½	1 25	31 75†	W. O. Frost	31 87½
5	E. Eichelberger	do		do	27	1 25	33 75	E. Eichelberger.	
6	J. Eichelberger	Painter		do	26¼	1 50	39 37½	J. Eichelberger.	
7	O. Cromwell	Coachmaker		do	27	1 50	40 50	O. Cromwell	
8	H. Reynolds	Carpenter		do	27	1 25	33 75	Henry Reynolds	
9	R. Aler	do		do	26½	1 25	33 25‡	R. Aler	
10	L. Forrest	Smith		do	26	1 42	36 92	Leo'd ⋈ Forrest.	H. Reynolds
11	P. Fullerton	Laborer		do	27	0 75	20 25	P. Fullerton	
12	Robb & Co.	Two Sawyers, each		do	26½	1 50	79 50	Robb & Co.	
13	C. Parraway	Helper to smith		do	27	0 75	20 25	C. ⋈ Parraway.	M. Glenn.
14	M. Glenn	Carpenter		do	26½	1 25	33 12½	M. Glenn	
	Gillingham & Jessop	Hardware	1	do			31 56		
	Conrad Keller	Turner	2	do			1 75		
	Wm. S. Browning	Oils, paints, lead, &c.	3	do			62 87½		
	McAvoy	Drayman	4	In a pass-book countersigned by the auditor, and returned.			20 25		
							$628 60½		
	By amount received for repairs for Cooper's Engine						29 19		
	Total balance						$599 41½		
	Deduct error in the item of						12½		
							$599 29		

I certify that the above account, amounting to $599.29½, is correct, and the services and articles therein charged were procured and applied in aid of the construction of wagons, &c., for the Baltimore and Ohio Railroad Company, March 31st, 1831. CANDUCE GATCH.

Baltimore, April 1st, 1831. Received of George Brown, the amount of the above account. C. GATCH.

I believe the above to be correct. G BROWN, *Treasurer.*

Audited. Five hundred and forty-nine dollars and sixteen and a half cents. W. WOODVILLE, *Auditor.*

Approved. P. E. THOMAS, P.
JN. BROWN.

Amount brought down		$599 29
Error—deduct		12½
Work applied to carriages destined for New Orleans		50 12
		$549 16½

Amount of Work done throughout March, 1831.

Two Winan wagons, for flour, Nos. 23 and 24.
Four common box wagons.
12th. Two Winans wagons, for flour, Nos. 25 and 26.
" One common box wagon.
19th. Two common box wagons.
" One Winans wagon, No. 27.
" Running gear for two Winans cars for Orleans, Nos. 28 and 29.
26th. do two do wagons for stone.
" do three do do do
" do one do do do

Filed 22d April, 1857.

Sep.